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THE INDUSTRIAL ARTS MAGAZINE

JANUARY, 1924

The Bruce Publishing Company
Milwaukee, Wis.

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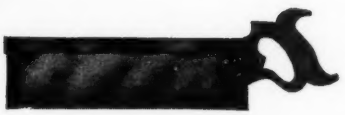

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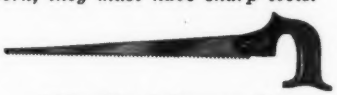

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INDUSTRIAL-ARTS MAGAZINE

Volume XIII JANUARY, 1924 No. 1

Youth and Industry

Ray F. Kuns, Principal Automotive Trade School, Cincinnati, Ohio.

THERE are several kinds of industry, but there is only one kind of youth. Webster says that youth is "The part of life that succeeds childhood: The period preceding maturity." Webster says that industry is "Any department of art, occupation, or business, especially one that employs much labor and capital." This is the type of industry we hear much about today. This is an industrial age, we say, and truly it is. But Webster also defines industry as (and by the way, this definition comes first), "Skill, cleverness; habitual diligence; systematic labor or habitual employment." We do not want to go into any discussion of the place of youth in the industry of capital and labor, interesting and pleasant though that might be, but we do want to consider the place of skill, cleverness, diligence—that other type of industry—in the life of the youth.

In this instance, we are rating youth as the important element; rather than consider youth in industry, we will consider the industry of youth. In my mind, the two are inseparable. Youth is industrious, always has been so, and always will be so, the term or expression "industrious youth" is familiar to all. It is contrary to the nature of youth to be idle—generally speaking. Youth is diligent, cleverly and skillfully diligent about this or that. I recall just now that Ring W. Lardner, in the last issue of the American, says of his high school course, "Most of we boys done our studying at a 10x5 table with six pockets in it." Who will say that he was not diligent, or that he was not skillful and clever, inasmuch as he confesses to having won his diploma?

Mr. Lardner concludes his article with this sentence, "From 12 to 17 or 18 ain't no time to waste on books especially in Niles, Mich., where gals is gals." He might just as well have said, especially in El Paso, where radio is radio, or especially in Buffalo, where shops is shops, or especially in Detroit, where autos is autos, or especially anywhere, where work is work and life is life, and boys are boys.

This brings us to the matter in hand, namely this, the place of the school shop in the life of the industrious youth. Is there any way to get the shopwork of our schools into the life of the clever, diligent youth of the land? I am not so concerned as to whether the teachers of the academic subjects can get their subjects within the pale, since that is even a greater problem. This might be said in passing: an industrious youth will be so diligent in evading and circumventing his academic assignments that he will develop a high degree of skill and become extremely clever in his dealings with people. However acquired, skill and cleverness are desirable.

Again we would ask, how is the school shop to be brought within the life of the average youth, remembering, of course, that youth is the period following childhood? Setting of childish tasks will not accomplish the deed. Setting adult tasks will not accomplish the desired end. Adult tasks are suited to adult minds and lives, and not always to youthful enthusiasm.

There is one thing which the boys and girls have a monopoly on, and that is youth with its youthful enthusiasms, and its youthful loves and ambitions. Why the expression, "No fool like an old fool," if this is not true? More often than not, a boy's loves have nothing to do with bobbed hair and dances. A moment ago a mother stood at the desk and said, "Albert is an odd boy. He never wants to go out, and he wants to work." I believe that there is nothing odd about the lad, there are thousands like him in our schools. He is in love with his work.

Where do our boys find their interests? Are they found within the schools and carried to the outside, or are they found on the outside and carried to the schools? I say carried to the school advisedly because, while many are carried to, few are allowed to enter the school. It is doubtless true that new interests are coming to the schools from the outside, rather than going from the schools to the people. Life, as it is lived, brings the new things, the schools can only follow along at most times a very poor second. Radio is a witness for this case. Schools are doing much along the lines of radio. They are second placers, however, both in time and I fear in actual technique.

It is doubtless true that everything now taught in the public schools was first taught in the private schools and homes. The public schools are an effort of the people to secure efficiency in the work of teaching the youth and children that which it has decided is desirable material. Shopwork in industrial arts, manual

training, or vocational education has found its place in the public schools because the public desired it so. As to the efficiency of the system, or systems by which the work is taught, there is some question. That the work has not always pleased the public is due to several reasons. One of these is just this, you cannot please everyone, and this reason need not enter into the consideration of the place of the industrious youth in our school shops. The main reason for failure where there is such, is due to an effort to teach childish things to youth—things which are beneath them—or an effort to teach material of interest only to mature men. However, the percentage of failure is appreciably greater in the first instance. We are all tourists along life's highway. Working on childish things has all the earmarks of a detour to the tourist over the span of youth. On the other hand, it is no disgrace to be beaten at a man's job.

How, then, are we to judge, pick or choose the work for the youth in our shops? Who is to teach? Are the schools to follow every whim and fad of youth? These and similar questions present themselves to us.

The so-called whims and fads of youth are not fads and whims at all. They are life. Recall radio again. The youth who makes his radio set, simple or elaborate as the case may be, is living. Many of us try to recall and do recall our youthful enthusiasms for use in the same game. But we amateurs play it according to the rules of youth. To the professional alone is it a consequential item. However, radio is not the only youthful enthusiasm. Automobiles, motorboats, hydroplanes, airplanes, steam engines, fire trucks, ladder wagons, street cars, sand diggers, locomotives, steamboats, john boats, guns, motorcycles, tugs, donkey engines, derricks, outboard motors, motor bikes, electric motors, dynamos, lathes, saws, grinders, welding equipment, water power, windmills, turbines, blast furnaces, trucks, tractors, dirigibles, these and almost countless other wheels from the industry of labor and capital are of intense interest to the industrious youth.

The Indian hunter gave his boy a bow and arrow to play with in order that he might develop prowess. It is of interest to note that the Indian did develop into a master hunter but his last generation has been no better than his first. The Caucasian race has carried modern civilization ahead by leaps and bounds but not on a bow-and-arrow diet.

It would seem that many homes show better educational foresight than the schools which the public has delegated with the power of giving industrial arts education. The youngster, even before he enters the school shop, is familiar with wonderful mechanical toys, he builds wonderful cranes, hoists, bridges, etc. He has his wagons, his sleds, his tricycle, his bicycle, and all manner of mechanical devices, and then when he is enrolled in our shops he is put to making coat hangers. One is forcibly reminded of a passage from the book of books wherein it says, "If he ask for bread, will he give him a stone?" Boys, as they come to us, have their minds keyed up to speed; we slow them to walk. They visualize themselves as the builders of wonderful machines; we entrust them with the manufacture of a sleeve board. They have in mind great engineering feats; we tell them, first learn to plane a board to dimension.

When Ring W. Lardner was learning his lessons on the table 10x5 with the six pockets, he was not taken in hand by his tutors and lectured to for a period of time covering ten weeks or twenty weeks, one 90 minute lecture per week, before being allowed to try his hand with the cue. Nor was he taken in hand and made to practice breaking the group until he rolled at least two balls each break. Nor following this accomplishment, was he made to practice straight shots until he was letter perfect and rolled his target into the pocket every time. Nor following this accomplishment was he made to practice single bank and then double bank shots until he was again perfect. Nor following this, was he taught how to put the proper amount of English on the cue ball and so on and on until he knew all the shots and rules of the game. Rather, he was very likely told where to get his cue and allowed to shoot for position and turn, after which the game would proceed. It is true that he knew nothing about the game but it is also true that he was under tremendous pressure to learn. Skill and cleverness can be developed at a wonderful rate. It is almost an assured fact that if Mr. Lardner, as a high school boy, had been taught pool in the Niles schools by methods similar to those suggested, it would be one additional thing which he did not learn.

The illustration used above is an attempt to show a path to follow in picking and choosing work for youth in our shops. Youthful enthusiasms must be taken into account. The course is not for the teacher; nor the school for the sake of the board of education. Youth will be served, if not in the school and through the school, then in the home or elsewhere. Note radio again as a witness for the case. Education in the industrial arts is not a question of materials but rather one of interests.

I am reminded repeatedly of the experiences of a young man of my acquaintance. His father came to me thirteen years ago, and mentioning the boy, said, "What would you advise? He thinks he wants to become an electrical engineer and is continually fooling about with electrical equipment. Do you think we ought to encourage him to go ahead?" The boy at that time was in sophomore high school grade. Looking ahead, this meant that he had almost three years of high school and at least four years of university work ahead of him. I told his father to encourage him in it and urge him to work toward that end. "But," I said, "it is not at all certain the boy knows what he wants to do, or rather that he will ever do the thing he thinks he wants to do." After his high school work and three and one-half years of university work in the electrical engineering course, the young man entered the actuarial department of a life insurance firm and at present is the head of it. Whether I am right or wrong, I have taken much

pleasure in believing that the habits of industry which this young man now possesses, were strengthened by his years of enthusiasm about the electrical engineering game. When he changed over to the insurance idea, he went at it with the same enthusiasm. The industry of this young man is the thing which has made him valuable. His systematic labors were dependent on his interests.

Interests vary in degree. A boy may be interested in a way in planing a board straight and square. But his interest is multiplied many times over when some machine or device which he has his heart set on, fails because his work is faulty. As far as I can see, the materials used in industrial arts cut a very slight figure. In the first place, the work is not trade work and there is no slightest reason that it should partake of the elements of any particular trade. What we are trying to say here is this: If every boy who has wood working in the public schools was to follow the wood working trades just because he had had that bit of classroom work, we would have an impossible situation. Again, there is slight chance of giving every type of work on every type of material but there is a large chance that our public school will enter into a great variety of trades.

Although the problems of the trade and the industrial arts schools are different, there are many points at which the method of instruction may touch. The trades school boy may build a gasoline engine in order to learn the processes necessary to earning his livelihood in the machine shop, the industrial arts boy will build it in order to have the engine and the fun of building.

Time and again I have been told that the boys in a certain type of community are not interested in mechanical devices, and will not do hard, laborious work in a shop for the sake of the product and the thrill accompanying the possession of the item made. I do not believe this is true. If it is true, how do you account for the fact that they will take an old decrepit Ford car and at the expense of much time and effort, build it into a speedster or a sport model? How do you account for the fact that they will buy or borrow every available book on a subject like radio and spend hours of time at home studying theory and details of construction. I am not in any way belittling the stereotyped form of educational training which makes possible the fact that a boy can study and make real progress at home; we are rather questioning the lack of foresight on the part of some teachers and schools. In industrial arts work, projects may and should be as varied as the interests of the boys. Radio, gas engines, outboard motors, row boats, motor boats, automobile bodies, and numberless other projects are suggestive of boyish interests.

Now arises the problem of the teacher. Who is to teach? How is the teacher to be trained? To be frank, I do not know the answer to the teacher training problem, possibly not even the start to the solution of it. I do have some views about what the teacher should be and these I shall give.

He must first be a man. Age is not so significant as whether or not he has retained and still appreciates youthful enthusiasm and the fact that the "world do move." He must not be an eight-hour man. Enthusiasm knows no time limits. The man who has firmly implanted in his being the clock idea will never be a success in the shop where youthful enthusiasms abound and conversely youthful enthusiasms will never abound where such a man is in charge. He must know mechanics; the more varied and expert his knowledge, the better. He must have a saving sense of the fitness of things, although the problem under consideration is entirely without his past experiences. He must be ingenious in fitting up devices, and must not hesitate to lay his own hand to the plane or the file. How is the youth to know ability to do, except he has opportunity to recognize it in action. And last, and possibly most important of all, the instructor must not be lazy or easily satisfied.

Some things the instructor need not be might be noted. He need not be an encyclopedia. He need not be an expert or master in all lines of work. He need not be too wise or give the appearance of knowing all things about all lines of work. He need not be ashamed to be a student and sit at the feet of his students when they teach him. He need not exercise himself to prove his superiority to his students. If he is superior, they will recognize it, and the same is true of inferiority. Further, he need not be afraid to smile on occasion, and show appreciation of life's kindnesses.

Just this week an instructor came to me and said: "Mr. Kuns, can you find some pieces of work which will give us some assembling and manipulating of parts? I need the work to keep my boys busy; you know that when you have 25 to 28 in a class, it takes quite a bit of work to go around. I can put three onto this particular job but when I do, they do not make as much progress as when there are only two on it. Then they have to produce and the responsibility is on them. Of course," he said, "I can give them a job of soldering some tins together in order to learn soldering but it has no real purpose, and they do not feel any responsibility for having it right because it serves no real purpose. When I do not have enough work to go around, my boys get into trouble, and you cannot blame them if you do not have them busy."

I believe that is pretty good pedagogy, and it is being applied daily in that particular man's shop. Problems of discipline do not arise. The boys are interested, they turn out the work, and slipshod methods have no place in the scheme. At all times there are many pieces of work under way. Work varies from soldering up an oil can to overhauling or rebuilding an engine.

Just at this point, it might not be amiss to reflect a bit on what may happen to the boy who is not busy, who is not allowed to give expression to the youthful ambitions with which he is filled. In talking over this matter with another of our teachers he makes the point that, while the habits formed by the youth who is allowed to loaf on the job are bad, that a far worse

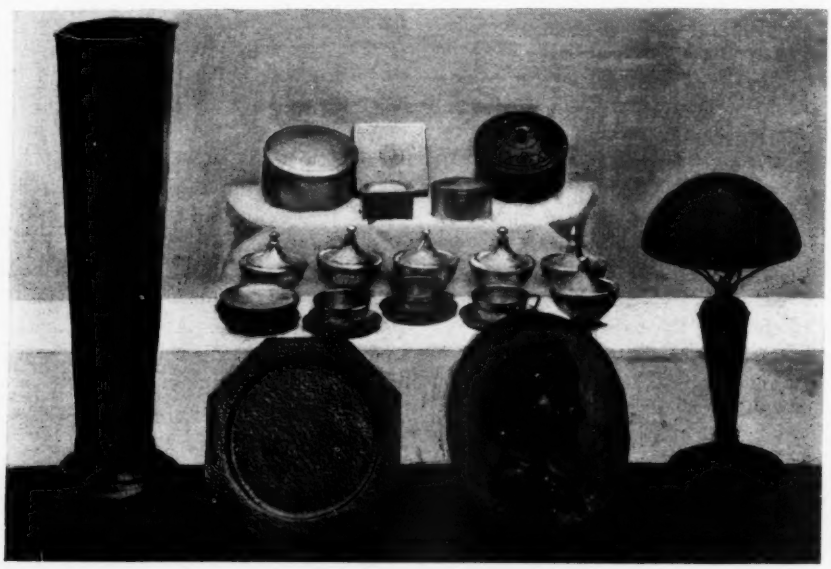
thing oft-times happens. It is his contention, and I am certain that I agree with him, that the boy loses something from his makeup, that we may be guilty of putting a crimp into the very soul of the youth.

What, then, can the public school shops do to bring the youth of the land into maturity with their very souls filled with the ambition to go into the field of industry and make the world sit up and take notice? I fear that too often we detract from, rather than add to the store of a boy's ambition. What type of shop is to be the answer, or rather, what type of shop will do the work suggested in the fore part of this paper? How radical must the change be!

In the first place, I would say that any high school or grade school system which attempts to make the chnage from the old stereotyped work quickly will have much to account for. The boys know what is being done and what the school shops have done in the past. They pass the knowledge of shop conditions along from one school generation to the next. They have all the shops and incidentally, the instructors, card indexed and cataloged. If an attempt is made to fit the outshops without taking the youth into consideration, I am not at all certain that we will have what they want when the equipping is completed. On the other hand, many boys now in our shops have definite ideas and rather definite plans, as well as rather definite ambitions. By making a determined effort to help the boys already in the shops, we shall gradually build up our equipment, to a point where it will serve in putting over boyish projects. The main thing about such a plan as it appeals to me is that we never need be limited in the thing we wish to do. Any material in the world, practically, is at our doors, and all sorts of equipment are available.

As an illustration of the type of project I have in mind, I would like to refer to the recent hydroplane or speed boat races on the Ohio River. Men of affairs, as well as men from the ranks, spent hours and hours, even weeks and months, planning, building, fitting, and testing their boats. I know men who worked to all hours of the night and sometimes all night to have their boats ready for the crucial test. Nor were they hired men. In fact, I doubt if you could hire them, as they worked for ten dollars an hour. They were not in the race for money, nor even for the silver cup but rather for that intangible something the cup stands as tangible evidence of.

I have long dreamed a dream. I have envisioned a school where the boy is king and the teacher a prince. I see a school where boyish ambitions are valued. I see teachers who take the advice of boys and boys who seek the advice of teachers. I do not see many shops in this school with brand splinter new equipment costing $50,000 and kept spotlessly clean and new. I do see a few machines of varied type and each one with a schedule of work taxing it to its limit. I do not see a class of thirteen boys making thirteen taborets but a class of thirty youths doing thirty different things. One is making a taboret because that is the height of his ambition and so he is just as happy as the lad who has just tuned out 'Frisco and is now trying to get the Fiji Islands, or the fellow who has just put the last daub of bright red paint on his rejuvenated flivver. I see the boy who is sweating at the forge hammering out a crankshaft for an outboard motor. As he hammers and sweats, barely seeing the glowing steel, just that amount of his mind required, is on the process; the rest of him is far, far away on the glistening bosom of some silver lake. There comes a cough, a hiss and then a steady purr, and he is away. Perchance a bobbed head may appear dimly outlined in the prow of the boat or perchance a Skinner No. 2 spoon hook be dropped off to troll in the wake to entice the wary pike. Who knows, who cares except to know that youth—glorious, invincible youth—is being served?



ART METAL WORK DONE IN THE STRONG JUNIOR HIGH SCHOOL, GRAND RAPIDS, MICH.
H. M. Dexter, Instructor.

Britannia Metal — V

Professor William H. Varnum, University of Wisconsin

WHILE attending a recent convention, the privilege of meeting artcraft teachers who use Britannia, afforded an opportunity to get the reactions of others. They were unanimous in feeling that the pupils find the material easy to manipulate, experience much pleasure in the color and texture of the metal, and are able to do home work with simple equipment (soldering with a small bunsen burner).

Certain teachers expected to find the metal much harder. If this were so, there would arise the same difficulties which encompassed and have limited work in copper and brass. History has shown that pewter survives constant use through many generations. As Britannia is really an excellent quality of pewter, stiffer and more durable in every way, there is no reason to suspect an early dissolution of the problems herein suggested.

With the present revival of colonial and early English architecture, Britannia ware has a complete historical and aesthetic accord; it is as appropriate as copper and brass for use with the mission period. As one becomes more appreciative of the pure design and good proportion of Britannia, the charm of the "bloom" will become more apparent. There is no vivid glare in pewter; when polished to a high degree, its surface absorbs light in perfect balance.

Classification of Pewterers

Old-time pewter ware was grouped under two general heads, *sad ware* and *hollow ware*. Sad ware included the largest dishes and chargers (often used for boars' heads), platters, trenchers, and other articles which, due to their size, could not be conveniently cast in molds. These objects were fashioned entirely by hammering from the flat sheet. The process tended to compress the alloy, while adding to its rigidity, although over-hammering would produce brittleness.

The sad ware men were poorly paid and regarded as inferiors by their fellow workers, possibly because they took the easiest way of finishing the beaten ware—lathe turning. The name, sad ware, is supposedly a corruption or abbreviation of the type of metal used by their trade, "fine pewter"—satiated or saturated with as much copper as it would absorb. This gives an extremely ductile metal, quite fit for hammering.

The hollow ware men dealt with smaller products cast in molds, such as mugs, pitchers, porringers, bowls, and tankards. They finished the ware with careful hammering and a minimum of lathe work. As the molds were expensive, they were frequently borrowed or exchanged. Itinerant tinkers of our own colonial period carried their molds with them and cast the desired articles on the spot. An ancient inventory of the year 1425 gives us a good idea of what was cast and used at the time: 1 holow scharyder, 1 platmolde, 1 sawsyrmolde, 1 medyll (middle size) plat molde, 1 medyll dysche molde, 1 medyll sawsyr molde.

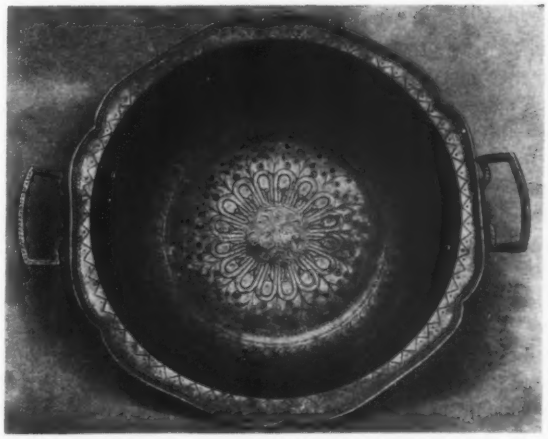


FIG. 12. AN ENGLISH PEWTER BASIN. 12 INCHES IN DIAMETER. Courtesy of the Boston Museum of Fine Arts.

To guard against the making of articles under specified weight and, therefore, inferior, the products of the molds were carefully regulated by the Pewterers Company. For example, chargers, platters, dishes, and saucers each had from four to six standard sizes, and each size was controlled by a fixed weight for every dozen. One dozen of the largest dishes must weigh eighteen pounds, while eleven pounds marked the requirements of one dozen small hollow dishes. A large charger must weigh seven pounds.

If the design so allowed, hollow ware was cast in one piece; otherwise in a number of parts, soldered together and finished by being carefully turned, scraped, and finally burnished with polished steel on a lathe.

Small articles similar to salt cellars and spoons were made by the "triflers" who worked in an alloy of pewter termed *trifle*. With this brief classification of the industry, we are able to locate the exact status of our problem, a shallow plate.

The Problem—A Dish or Plate

Among the commonest objects of the pewterers' craft is the plate, ranging in size from a few inches to twenty inches or more in diameter. In 1290 we find King Edward of England owning one hundred pewter dishes, one hundred platters, and curiously enough, one hundred salt cellars.

Referring to Plate 1, we find early Roman plates, unearthed in England, showing (with a few exceptions) a marked similarity to modern designs. The earlier English plates were originally quite plain, strengthened by a single reinforcement placed *below* the rim. Later this band was placed above, taking the form of reeded bands, mouldings or flat beads. The Eighteenth Century rim is often enriched by mouldings in imitation of contemporary silver plates.

In attempts to compete with silversmiths, the rim (a tempting area for the designer), frequently became the field for surface enrichment. Elaborate carving and punch work which subtracted from the simplicity

of good proportion and attractive contours of well-designed pewter, was introduced. Figures 12 and 13 illustrate this point.

The Design

As a rule, the older plates are much simpler than the modern productions, possessing broader rims and made of thicker metal. As our problem is an elementary one, we shall select one of the older patterns, remembering that old pewter was made by a master craftsman who evolved beautiful forms and proportions, not because of the value of the metal; rather through a true love of attractiveness possible in an inexpensive medium through which he expressed his art. Moreover, the comparative cheapness of the alloy allowed him to develop a plate of sufficient size, wherewith to give free range to sturdier forms pertaining to Britannia design.

The most important consideration of the designer is to determine (1) the proportional relationship between the width of the basin and the width of the rim, and (2) the uniting line of curvature between rim and basin. Considering point one, a study of the widths of rim and basin of the round Roman dish of Plate 1, compared with the broader rims of two Seventeenth Century plates, gives one the impression that the wider rim with its attractive expanse of metal adds effectiveness to the design. For example, a wider rim would have increased the beauty of the plate of Figure 12.

As to point two, we must have a transitional curve equaling in purity the sweep of a Greek curve. A compass quarter circle is mechanical and ineffective. A sharp turn near the rim developing into a flattened curve at the basin's bottom is better, approaching but not duplicating a quarter ellipse. For constructive purposes, the bottom of the basin was and should be domed *slightly* upward.

Two American Colonial examples illustrated on Plate 1 are proportionately deeper with concave rims. Here, one should follow the law of design, which states that the deeper the basin, the greater the angle of the rim; and conversely, the shallower the basin, the more nearly horizontal the rim. These variations are suggested for special uses, but a postulate in plate design is this: The more nearly the rim approaches a horizontal plane, the finer the result.

For accenting the contour of the rim, we have to turn to a tried principle of constructive design, namely: Enrichment must support construction and be a part of it. Let me repeat that the older plates (Plate 1) have their rims reinforced by flat bands of metal added to the *under* side. Let us grant that this may be good construction, but by adding this reinforcement to the top side of the rim, we not only continue to provide *good construction,* but at the same time we add an element of *good decoration.*

While our plate should have *sturdiness,* this top band gives an added *delicacy* quite fitted to the material. The illustrated reeded plate, with its mouldings *withdrawn* slightly from the edge of the rim does not prove as effective either for beauty or construction. Mouldings other than the flat bead or reeded pattern may be added as long as they are kept simple and of a restrained convexity which will add to the appearance of the plate.

The Eighteenth Century salvers with their mouldings well placed with relation to design principles, although they may be imitations of the silversmiths' art, are far from ornate and quite simple enough to be considered allowable in Britannia. The illustrations show the basin bottom as flat. The originals had small feet, thus reconciling flat bottoms to good construction.

Thus it is seen that, while plates vary little in general form, they change to a marked extent in details as to rim and basins. It is in these apparently trivial variations wherein the art of the designer is shown, where the imagination has opportunity to combine sturdiness with delicacy, the essence to plate design.

The Construction—Plate 2

After these design considerations, it may seem a bit anomalous to suggest a Seventeenth Century plate with reinforcement below the rim, nevertheless this lapped reinforcement presents the simplest form of plate construction (Figure 1), and as one gains in skill, other plates of better design may be attempted. The uses of this plate are so evident, that it is hardly necessary to summarize them.

Sad ware men were distinctly hammer men, and Plate 2 represents essentially hammer processes and is in a way a review of the porringer construction taken up last month. Having completed the design with a plan and half-section drawing, cut a circular blank of 18 gauge No. 1 Britannia. An advanced craftsman developing a Colonial type, should use No. 2 plate. According to the size of the plate, which should not exceed twelve inches, add from one-quarter to three-eighths of an inch to the *radius* for lapping. With a pencil compass, draw a guide line for lapping as shown in Figure 2, protecting the center of the plate from needle point marks.

A bottom-stake with its edge slightly rounded to prevent cutting the soft metal, or better, a cylindrical piece of smooth metal approaching the diameter of the pencil lapping guide circle, is fastened in a vise, and with either a wooden or horn mallet one may begin to shape the lap as in Figure 3. Make this a gradual process, moving entirely around the metal blank on the pencil outline with no attempt to complete the right angle of (1) Figure 5 at the first revolution. When (2) Figure 5 is secured, place the blank on a flat and perfectly smooth surface and close the lap by striking on the *inside* edge, leaving a roll to the outer edge as in (4) Figure 5. This roll adds to the apparent thickness and strengthens the construction. A small nickel-silver wire may be slipped into the lap (Z, Figure 4) at step (3), Figure 5, and a perfect edge formed over this mandrel which is permitted to remain. This is one of the characteristics of Russian construction.

The Stroke

At this stage it is necessary to study the technic of the hammer stroke. A common tendency for beginners is marked by holding the hammer stiffly, main-

taining a rigid arm movement which is extremely tiring and not conducive to the best results. Hold the hammer easily, swinging from the elbow and wrist with a flexible and free movement and in such a position that a line drawn from the center of the stake or form will always pass through the point of contact with the work, the hammer head and handle, the forearm, elbow joint, and shoulder. In lapping, the disc is held in the left hand which rotates the blank clockwise. The hammer man takes three strokes, feeding the blank slowly under the hammer; he pauses to shift the left hand to a better position; he repeats three strokes and again manipulates the left hand. The rhythm of the three strokes will become automatic, while the feeding process synchronizes perfectly with the strokes. Unless the hammer is in an incorrect position, do not shift it; move the work under the hammer. You are a power trip-hammer; let your muscles function in a like manner.

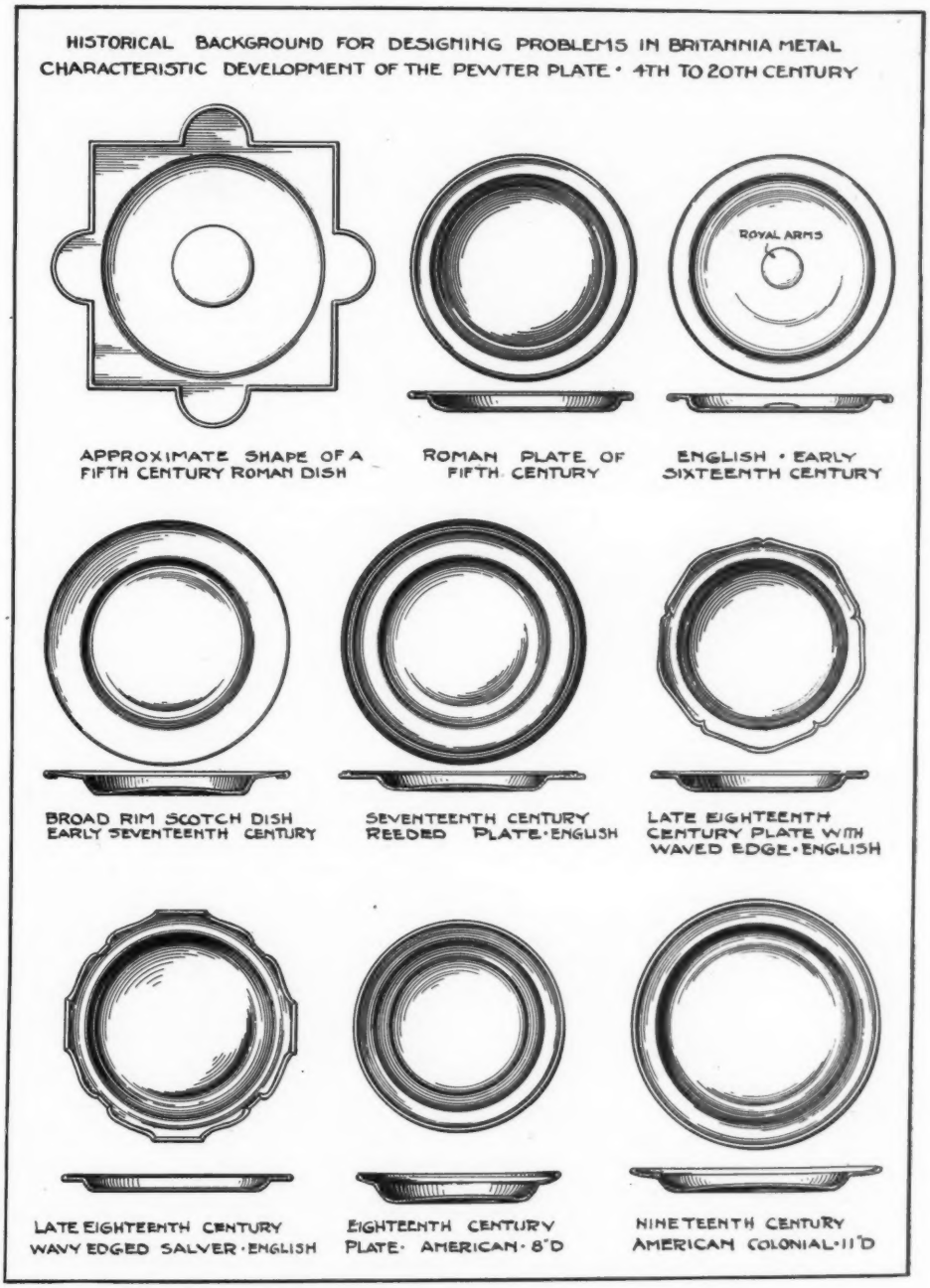

HISTORICAL BACKGROUND FOR DESIGNING PROBLEMS IN BRITANNIA METAL
CHARACTERISTIC DEVELOPMENT OF THE PEWTER PLATE · 4TH TO 20TH CENTURY
ROYAL ARMS
APPROXIMATE SHAPE OF A FIFTH CENTURY ROMAN DISH
ROMAN PLATE OF FIFTH CENTURY
ENGLISH · EARLY SIXTEENTH CENTURY
BROAD RIM SCOTCH DISH EARLY SEVENTEENTH CENTURY
SEVENTEENTH CENTURY REEDED PLATE·ENGLISH
LATE EIGHTEENTH CENTURY PLATE WITH WAVED EDGE·ENGLISH
LATE EIGHTEENTH CENTURY WAVY EDGED SALVER·ENGLISH
EIGHTEENTH CENTURY PLATE· AMERICAN· 8"D
NINETEENTH CENTURY AMERICAN COLONIAL·11"D

PLATE I. THE HISTORICAL DEVELOPMENT OF THE PEWTER DISH.

Lapping completed, draw a pencil guide line to mark the separation of rim and basin and proceed to beat down into a turned hard maple block of the correct form, stretching the metal gradually downward directly

over the curve as shown in Figure 6. Two difficulties are encountered: the rim will wrinkle, and the basin will become too large for the mould. Check the former by the use of the flat end of the wooden mallet, and "A" (the second alternate) on the same figure illustrates a groove cut out of the top of the block. Imagine the blank shown to be moved back and across the block until the guide line meets the edge of the groove; the

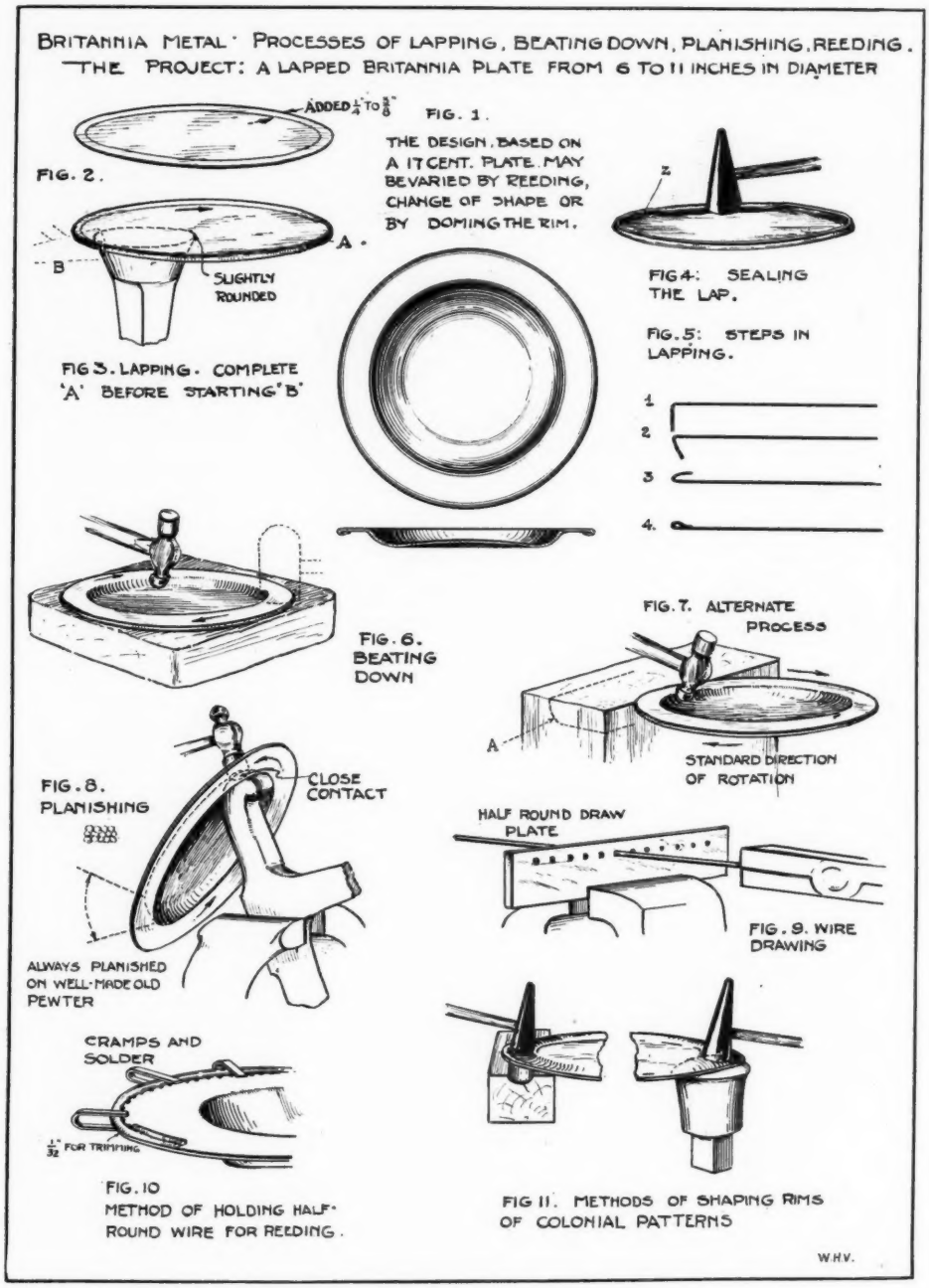

BRITANNIA METAL · PROCESSES OF LAPPING, BEATING DOWN, PLANISHING, REEDING.
THE PROJECT: A LAPPED BRITANNIA PLATE FROM 6 TO 11 INCHES IN DIAMETER
ADDED 1/2 TO 5/8"
FIG. 1.
FIG. 2.
THE DESIGN, BASED ON A 17 CENT. PLATE, MAY BE VARIED BY REEDING, CHANGE OF SHAPE OR BY DOMING THE RIM.
A
B
SLIGHTLY ROUNDED
FIG 3. LAPPING. COMPLETE 'A' BEFORE STARTING 'B'
Z
FIG 4: SEALING THE LAP.
FIG. 5: STEPS IN LAPPING.
1
2
3
4
FIG. 6. BEATING DOWN
FIG. 7. ALTERNATE PROCESS
A
STANDARD DIRECTION OF ROTATION
FIG. 8. PLANISHING
CLOSE CONTACT
ALWAYS PLANISHED ON WELL-MADE OLD PEWTER
HALF ROUND DRAW PLATE
FIG. 9. WIRE DRAWING
CRAMPS AND SOLDER
1/32" FOR TRIMMING
FIG. 10 METHOD OF HOLDING HALF-ROUND WIRE FOR REEDING.
FIG 11. METHODS OF SHAPING RIMS OF COLONIAL PATTERNS
W.H.V.

PLATE II. PROCESSES OF MAKING A BRITANNIA WARE DISH.

prevent the latter by working slightly within the bending line, gradually moving out to the limit of the mould. Forcing the beating-down process will result in splitting.

As alternate processes, Figure 7 considers beating down directly over the edge of a hard wood stake; while process then becomes a duplicate of Figure 7, while we have a guide for the rim-basin curve controlled by the shape of the groove. The process of Figure 7 is to be carried out by the triple hammer strokes just described. In Figure 6 the form is rotated under the hammer, while, if difficulty is experienced in keeping the blank

centered, small brads may be driven into the wood, forming guides within which the circular disc will rotate freely.

Planishing

In old pewter, the flat ware coming from either mold or hammer man was planished or hammered to refine and complete the desired curve between rim and basin. This hammering was desirable as increasing the durability and stiffness, for plates were subjected to great strain at that point. All good examples of old plate show marks of the planishing hammer between the points indicated in Figure 8. One may fasten the tee or other stake approximating the desired curve into a vise and using the flat end of a ball and pein hammer, or better still the slightly curved surface of the highly polished silversmiths' planishing hammer, proceed to planish one row of strokes completely around the plate and directly under the rim. The stroke is scarcely more than a *tap* with the hammer raised about four inches above the work, striking with the triple rhythm of the beating-down process.

As this is a perfecting and refining process, care should be taken to use a light springy stroke of even weight. Old-time apprentices were placed at the task of planishing large trays, work of extreme difficulty. But to proceed with our planishing: When one row is complete with every part of the surface covered, follow with the second row overlapping the first to a slight degree, and so on until the bottom of the curve is encountered. If the stake has a smooth surface, one will find the inside of the plate well finished.

Dome the under side of the tray slightly upward in a manner similar to the porringer problem; remove all dents with the wooden or rawhide mallet, then polish, and the tray is complete. If one so desired, old-time processes could be followed by shaping the plate from heavier gauged metal, beating down, chucking, thus finishing beads, rim, and lower part of the basin with turning tools and a lathe.

After the student has become familiar with the process described above, attractive designs may be constructed by the use of the draw plate and draw tongs (Figure 9). A strip of pewter is cut from the sheet,

FIG. 13. A COLONIAL SILVER DISH, BY SAMUEL MINOTT, 1732-1803.
Courtesy of the Boston Museum of Fine Arts.

pointed at one end and drawn through the graded series of half-round holes of the draw plate until the desired size is reached. The half-round ribbon is then bent around the rim of the plate and held in place by "cramps" of thin spring brass or light steel; *minute* pieces of solder are placed at the joint and the entire enrichment is soldered. A double row of reeding may be judiciously arranged to add to the delicacy of the pattern. If difficulty is experienced in holding the ribbon in place, tack the moulding at one point with solder. One may make attractive mouldings by shaping a draw plate with needle files from heavy brass.

Figure 11 explains school methods of shaping Colonial rims of the pattern illustrated on the design sheet. A curved depression is beaten down into the rim, using a groove in a hard wood block. This is afterward trued on a mushroom stake, the basin beaten down as described under construction, while the half-round moulding is added as the last step.

Britannia metal may be secured from either the Hoyt Metal Company of St. Louis, or Reed & Barton of Taunton, Mass.

What Shall We Teach as Architectural Drawing?

Gilman Lane, Central High School, Kalamazoo, Mich

TO DETERMINE what we shall teach, we must first find out what aims we have in teaching architectural drawing. Needless to say, we do not expect all of our students to take up architecture in the universities, and surely we do not want them to become architects without such training. We are not training them to become tracers in the offices of those who are fortunate enough to receive university training in architecture. Surely we aren't teaching the subject just to give the boy a chance to earn a credit. It might be taught merely as a cultural subject, but it has a greater and wider field, still retaining its cultural aspects. This field is teaching an appreciation of architecture and architectural design as applied to home-building, so the student will be able to intelligently plan or choose his own home in later years.

We see everywhere the evidence of the lack of taste in home-building. Our streets are lined with "misfits" of all kinds: houses that are only a collection of boxes under one roof; houses that are too close to the street or to each other; houses fairly well designed, but placed

in the wrong location; houses over-decorated with "gingerbread" stuff. It is the duty of those who can to try to correct these erroneous ideas of what a house should be, and to help to make them "homes" instead of houses; homes that will be attractive enough to counteract to some degree the influences of today that are drawing people away from their homes to spend their waking hours. This duty we owe to our country, in the interests of our fellow citizens.

How can we do all of this? First, there is a wealth of material that should be brought before the student. He should be taught something of the history of architecture in this country—applied to house; of course—and its antecedents in Europe. He should be taught the distinguishing characteristics of each style used in this country. The question of selecting a site and adapting the house to it should be thoroughly gone over, as well as choosing the style of house that fits the needs best. The room arrangement is an important phase, of course; as is also that of which building material to use. In this connection the student should be taught the advantages of and disadvantages of wood, brick, stone, stucco, shingles, etc., as a wall material; of shingles, slate, tile, asbestos shingles, etc., as a roof covering. Different methods of fireproofing, inside and out, should be discussed. Manufacturers of building materials are naturally glad to supply information on materials, fireproofing, etc.

Good and bad details of all sorts should be compared—doors, windows, shutters, cornices, columns, etc. Proper methods of finishing the house inside and out should be taken up. All of these things should be applied to the different types of architecture in use in this country. And then there might be added something of the effect proper planting has upon the house after it is built. Nothing has been said about the "orders of architecture," or the great cathedrals of the world, but the student has gained a knowledge of something that will have a direct bearing upon his life.

To be able to present these things properly the teacher must do an endless amount of reading—endless because new things are always being brought forward, and one must be forever on the lookout in the latest books and magazines. This information will be much more easily grasped and remembered by the student, and much more easily given by the teacher, if lantern slides are used in connection with these various lectures—lantern slides bearing directly upon the subject at hand and arranged thoughtfully to "put across" the good points at the expense of the bad. The architecture of the city or town in which the class is being taught is a fertile field, although in this case the good is stressed while the poor must go unscathed.

The question that naturally arises is: Where does the pupil do any work? Is the course to be all lectures by the teacher? Decidedly not—neither is it to be the drawing of a lot of architectural details—cross sections of doors, windows, etc.; or the drawing of a poorly designed house from some lumberman's well-meant advertisement. Presuming that the student has had previous experience in using the drafting tools, his first work in architectural drawing may vary profitably by copying a set of plans and elevations—a *good* house, one that has been designed by a good architect. This is a very important thing—making sure the house is well designed. It is worse than no work at all to copy a poorly designed house. To learn to do good things one does not practice on bad things. Copying plans and elevations gives the student practice in architectural technic, which naturally differs from that in machine drawing. Many architectural symbols and conventions make themselves known, and the student should always have the inquiring frame of mind—why did the architect do it this way?—etc.

Having become a little more familiar with the language of architecture, his second piece of work may very well be one that is partly original. He may be given the floor plans and a photograph of a house—required to copy the floor plans, changing them slightly, perhaps, and draw the elevations with the photograph as a guide. Or, he may be given a New England colonial house to re-draw as a Dutch colonial—or a thatched half-timber cottage to make over into a brick with the tile roof. After this second problem the student's work can be called original. He may be asked to design a fireproof six-room bungalow, or a brick colonial house. By this time the lectures of the instructor have made him acquainted in a general way with such types as Dutch colonial, New England colonial, English cottage, Italian, etc., and the student may be qualified to study further any one type with the aim to design the best possible house of his chosen type. Again, he might be assigned to design the house that will come nearest to being ideal in every way. If the time is limited, a summer cottage may be substituted for the more pretentious town house. Freehand or mechanical perspective add much to the attractiveness of the finished job.

Architectural drawing has been called a cultural subject. Surely any drawing that emphasizes neatness and accuracy has cultural values, but architectural drawing goes even further. Learning to appreciate the things that go to make a well designed home is decidedly cultural. One who appreciates simplicity in design, proportion, balance, symmetry, has learned to see more in a house than the four walls and the roof. There are many forms of culture, of course, but he who appreciates a beautifully designed home is decidedly more cultured than one who does not. Such a person realizes the futility of building restrictions that state the house must be so many feet from the street and must cost not less than so many thousand dollars. He knows that real beauty is not measured in terms of dollars; that there can be just as much beauty—often more—expressed in a little cottage as in the mansion costing tens of thousands. If we can add this bit of culture to the wealth of culture available to the coming generations, then we have given them something worth while, a new regard for the house, upon which we as a nation have learned to place so much faith.

Production of a High School Annual

In a Platen-Press Equipped School Shop

R. R. Deimer, Instructor of Printing, Central High School, Aberdeen, South Dakota

THE production of a high school annual in a high school print shop, hand set and platen printed, differs very widely from the production of a high school annual by a school which has the work done outside of the school, namely, by a commercial print shop.

It may be of interest to some schools and print shops to know of the methods and organization scheme I have used, with some degree of success, for several years past in the Central High School at Aberdeen, South Dakota. I realize that the following article may not be the ideal of the situation, but in some respects, at least, I believe it worthy of the time spent in the reading.

First of all, a few lines about the size of our shop, the nature of the equipment, also the number of students taking the work and the time spent in the shop for credit. Floor space, twenty by thirty feet; equipment, two platen presses, 8"x12" and 10"x15", Chandler and Price, one 25" Challenge cutter, a Boston foot stitcher, ten cases of ten point Century Expanded (body type) and a variety of job fonts in series of a nature similar to that found in any well organized and up-to-date commercial establishment. The larger Chandler platen press is equipped with Morgan Expansion roller trucks and with a single vibrating roller for ink distribution. It is on this press that the yearbook is printed. The average enrollment for the past five years has been forty. The printing course is elective for one or two years, and all high school students are eligible. Practically all students take the work for the two-year term, one hour per day, five days a week for 38 weeks per year. One credit is allowed per year.

The annual printed by the students last year was made up of 130 pages, 7¾"x10¾". Two pages were run at a time on sheets, 11"x16", which was factory cut from stock 32"x44"—119 pounds, enamel book. The cover, extra heavy weight Lodestone stock of dark blue was printed with gold, from a school insignia cut and type matter. The entire body of the book, with the exception of the introductory section, was set in ten point Century Expanded, Roman, with titles of ten point Century Expanded, Italic Caps. Section titles were run in fourteen point of Century Italic Caps. On all type pages and pages not of full cuts, a running head of distinctive school design was used. Full-page zincs printed on regular body stock were used as department separations. The book was profusely illustrated with half-tones and etchings, comprising approximately 1750 square inches of space. All art work was entirely student talent.

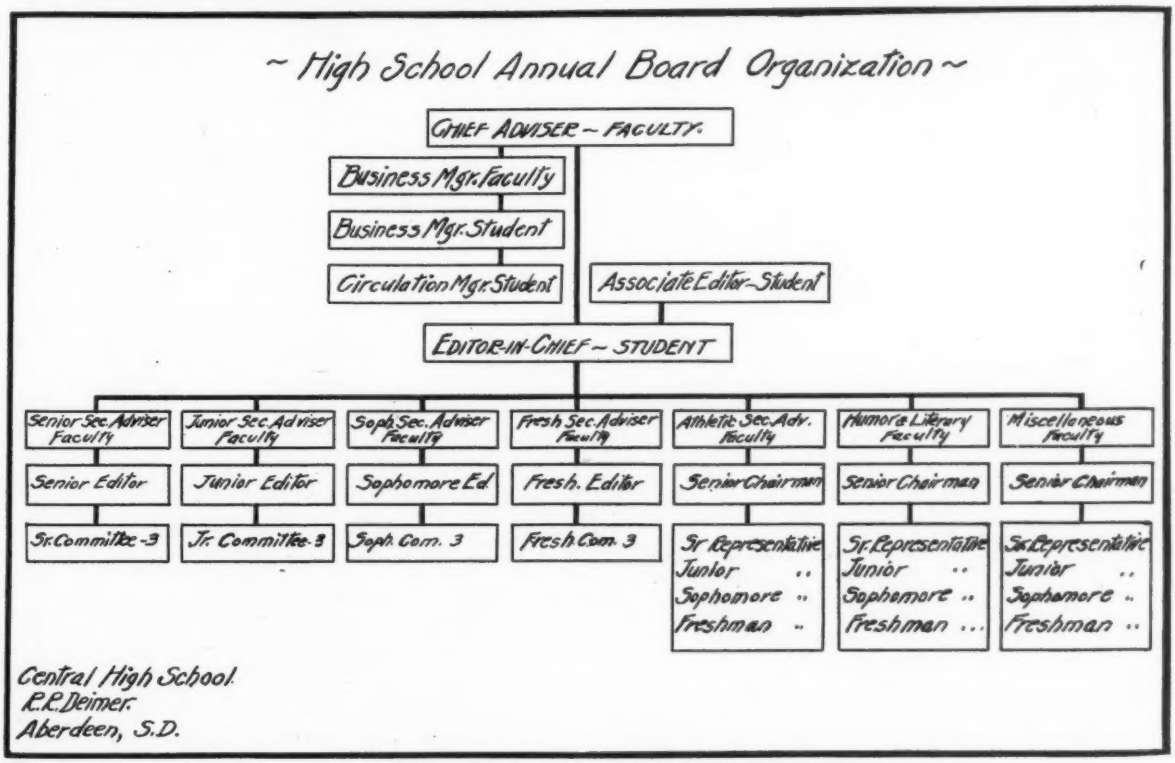


FIG. 1. ORGANIZATION FOR PRODUCING A SCHOOL ANNUAL.

FIG. 2. THE PAPER FOR THE JOB.

The organization chart, as shown, will give a concise idea of the relative working parts of our annual board. Several schemes have been tried, but from past experience it was found that the organization here shown has proven the most successful with the least amount of grief and least amount of lost time, which in itself, is a very important element. It will be noticed by referring to the chart that each section has an adviser and that the adviser is a faculty member, also that the chief adviser is a faculty member as is the business manager. The junior editor, who must keep in close touch with the editor-in-chief assumes the title and duties of the editor-in-chief the following year. The position of faculty business manager is usually placed with the printing instructor because of his familiarity with purchasing cuts, stocks, inks, etc. With the editor-in-chief rests a large responsibility, and because the editorship is not a school honor—it's a school job, and an exceptionally capable and dependable student should be selected. He must be a conscientious worker and a student of general popularity. He must be able to convert the unlooked for complications into cooperative results, making of his board, at all times, a smooth running machine. The matter may be summed up in several "directions" which the writer gave his student board at their first meeting in September, 1922: "The first thing for the editor to do is to become thoroughly frightened—now—and not when it is too late." The best advise to the entire board is, make your annual original, forget the last year's book and remember the annual will not get itself out. You will be surprised to find how large a job you have tackled, large in light of details that must be accurately handled. You will have a lot of queer things to contend with and most of them unexpected and unlooked for. Too much stress cannot be placed upon starting early. A week after the formation of the board you can have the dedication, foreword, afterword or editorial note, etc., and typewritten for the print shop."

While the board's job is heavy and interesting the job of the meagerly equipped high school print shop, with its forty green printer's devils is also heavy, as well as very interesting and a large part of it in the way of worry for the instructor, who must see that the material gets to and off the press at such a time as to keep the work going at a reasonable pace. The instructor must see that the work is of a nature as to be a commendable product from his department, a product free from finger marks, with uniform impression and inking as well as good make-ready for the halftones and all other outstanding features that distinguish a good job of printing from a shoddy job. The school print shop's smallest job or task is pleasing the students who receive the annual, the greatest that of getting out a book that will stand the acid test of inspection of the various commercial printing concerns in the town and surrounding communities. They are the men of the trade who appreciate the fact that almost right is always wrong.

The following is the schedule we have adhered to as closely as possible during the publication of the last season's annual, with very gratifying results.

Time Schedule for Copy and Cut Material.

Freshman class material, February 5th.
Sophomore class material, February 19th.
Junior class material, February 26th.
All class pictures and snaps February 1st.
Special feature material in not later than one week after date of occasion.
Football copy one week after close of season—snaps and photos two weeks before close of season. Basket ball material one week after close of season—snaps and photos three weeks before close of season.
Literary and Humor cut material January 25th. Copy material March 1st.
Department material complete with cut material February 20th. Senior material March 20th. Seniors positive of graduation may have photos taken Christmas vacation, others as soon as assured of graduation through main school office.

It is very probable that no two schools will have annual boards, the members of which will have the same ideas relative to what they think should make up the distinct sections or departments of their book. The schedule given is one we worked from in consequence of the board's desire to have the annual sections as listed in the schedule. While there is of necessity a certain amount of flexibility in the schedule, care should be taken to see that the work comes in as closely as possible to the dates listed. The item of much importance is the getting in of the material for the cuts on time, as often unexpected delay is encountered in getting cuts back from the engravers at the expected time.

In a school print shop in which a teacher is expected to do the entire job work for the school system, and possibly get out a high school paper and junior high school paper, it is a mighty good idea to get the

annual plans well under way very early in the season. A couple or three weeks after the start of school, it is possible to have the board organization perfected. The board should early decide upon the size of the book in order to give the printer ample time in which to get his supply of stock and ink. The cover can be selected at this time, as well as stock for department separations, if it is decided to have separations, also stock for the introductory or advance section of the book which is likely to be different than the stock used for the body of the book. If advertisements are to be run, it is necessary to take into consideration the amount of space to be used and order stock accordingly. We do not run advertisements in our annuals or publications, as we find that businessmen of the town are pestered enough without inflicting upon them our plea for charity.

In planning the actual printing of the book the editor must be in close touch with the printer. It has been my experience that we have been most successful during the years that the editor-in-chief was a regular student in the printing classes. All work must be planned to be run in sections of four pages. By reason of the fact that the 10″x15″ press will accommodate only two pages at a time, much care must be taken in keeping those that have been run clearly in mind so as to back them up with the proper run when the time comes for it. As soon as four pages, the two runs on the same sheet have been completed, it is folded and securely wrapped and stored away until the time when the book is completely printed and ready for assembling. In a shop where the entire job is hand set, it is necessary to get the type back in the cases as soon as possible in order that too much matter is not standing and that other pages may bet set without delay. It is a very good plan to have all the type to run with cuts set at the time the cuts arrive from the engraver, so as to cause any delay in getting the runs from the press. By referring to the schedule for copy and cut material one will see that ample time is allowed to take care of this matter.

The ideal place for fathering the various sections of the annual is in the study hall or assembly room where thirty to forty desks may be used.

After gathering, the books are stapled and trimed on the three sides. The cover scoring is very nicely handled on the press with a regular scoring rule. It is a good plan, really necessary, to score the covers for the book insertion as well as for cover opening. After gluing the body of the book to the cover with hot glue, the holes for the cord or tie may be punched. We used a Southworth punching machine for this operation.

Financing.

The question that usually arises is how to make the high school annual self-supporting without running ad-

FIG. 3. TYPICAL COVERS OF THE ANNUAL PRODUCED BY THE AUTHOR'S CLASS.

vertising. The cost of the annual of course will be determined not only by the size of book and quality of stock used but to a great degree by the number of square inches of cuts, provided of course that the mechanical production of the book is handled by the school print shop.

From my experience in getting out yearbooks for three high schools and one college, eleven annuals, a fair estimate of the sales as compared to the enrollment would be 66⅔ per cent. It is always possible to make the selling price of the book high enough to pay for the actual production, but usually that price is too high, due to the limited circulation of such books. Take, for example, a school of 600 enrollment and estimating the sales at 400 and an additional 100 copies for exchanges, history files, and complimentaries, a fair total cost approximation would be $750 to $800. This price estimate will cover stock, ink, cuts, photography, express, and incidentals. If a student were to be charged a pro rata cost of production, his book would cost him about $2, a price entirely out of question for a book of its size.

A price of one dollar is within the reach of most students, and, if a book costs two dollars to produce, some means must be taken to raise the other dollar for each book sold.

One plan I have had experience with is that of taxing the school organizations which have a source of revenue, a set price for the cuts they wish to use. Organizations are always more able to pay than individuals, so it is but reasonable that they help carry the cost burden. For a full page half-tone, 5″x8″ a price of twenty dollars was charged, for a half-page ten dollars, for other sizes a proportionate price. This scale of charges gives the board a fifty or sixty per cent margin of cost to work on. Class or club pictures are figured on the same basis. The per capita cost for classes or clubs with fifty to two hundred members is slight even though they have no income. The members of the graduating class may also be charged a set price for their individual reproductions or cuts appearing on a panel. A charge of one dollar or a dollar and a quarter has been made. This price does not pay for the panel if there are only four on it. In fact, it pays about sixty per cent of the cost. If the graduating class is a live one, it will have no trouble raising several hundred dollars from the senior play, as well as from some special stunt night, such as, a fair, a bazaar, a circus or carnival. With the surplus proceeds from class and organization affairs and from entertainments mentioned, no trouble should be encountered in financing a high school annual, regardless of how pretentious a book it may be, provided there is a saving of the mechanical production costs through printing the book in the school shop. If the annual board decided to run advertising which, in my opinion, is an eyesore in a school year book, and have the printing done outside of the school the financing of the printing can be met by the revenue derived from the advertisements and from the surplus on the cut charges.

It is regretable that more high schools and other schools do not produce their own annuals. Viewed in the light of a socialized project I can think of no other project that offers such abundant opportunity for practical cooperation from so many departments within the school.

Application of Standard Tests and Measurements in the Manual Arts[1]

A. G. Bauersfeld, Supervisor of Technical Work, Chicago High Schools

ONE of the important themes on the programs of the National Education Association for a number of years past has been the discussion of standardized tests for the measuring of mental abilities. The measuring of this socalled "general intelligence" was arrived at through the avenue of written performance tests that attempted to measure six varieties of capacity which were more or less in close inter-relation.

The capacities tested for were: (a) selective thinking, (b) memory and association, (c) quickness and accuracy of perception, (d) motor control, (e) sensory discrimination. It was claimed that general intelligence could be measured with a high degree of accuracy through the use of these tests and that the time seemed not far distant when we would be able to say to a student:

"Such and such is the order of general mental capacity that we may expect of you at the present time. If you do not attain such and such a standard of efficiency it will be due to other causes than to lack of mental capacity."

Like every new movement in its promotion stage, the claims of its enthusiasts often fall short of the actual results obtained. However, a great deal of good has come from this quantitative measurement of mental capacity, because it places psychology upon the same objective ground for scientific research as other sciences such as chemistry, physics, etc. To the school people the subject of mental tests has now become of universal interest because it is a method of approach to a better classification of the pupils within the schools. Mental tests are being used to classify pupils into three groups such as: superior children, normal children and subnormal children.

However, such factors as environment, inheritance, personal characteristics, educational advantages, physi-

[1]Abstract of an address before the Illinois Manual Arts Association, October 20, 1923.

cal weakness, and emotional reaction are modifying elements which must be taken into consideration before a final statement is made.

The results actually achieved by the use of the mental tests in the United States army under the department of "Classification of Personnel" perhaps stands out as one of the most significant pieces of work accomplished by a committee of psychologists for a number of decades. The results actually achieved were: (1) assignment of an intelligence rating to every soldier on the basis of a systematic examination; (2) the designation and selection of men with superior intelligence as commissioned and non-commissioned officers; (3) the building up of different army units of uniform mental strength in accordance with the different specifications concerning intelligence requirements; (4) the selection of men for various types of military duty or for special assignments; (5) the development of batallions of men who were so inferior intellectually as to be unsuited for regular military training but who could be used as common laborers; (6) the elimination of men whose intelligence was so inferior that they could not be used to advantage in any branch of military service.

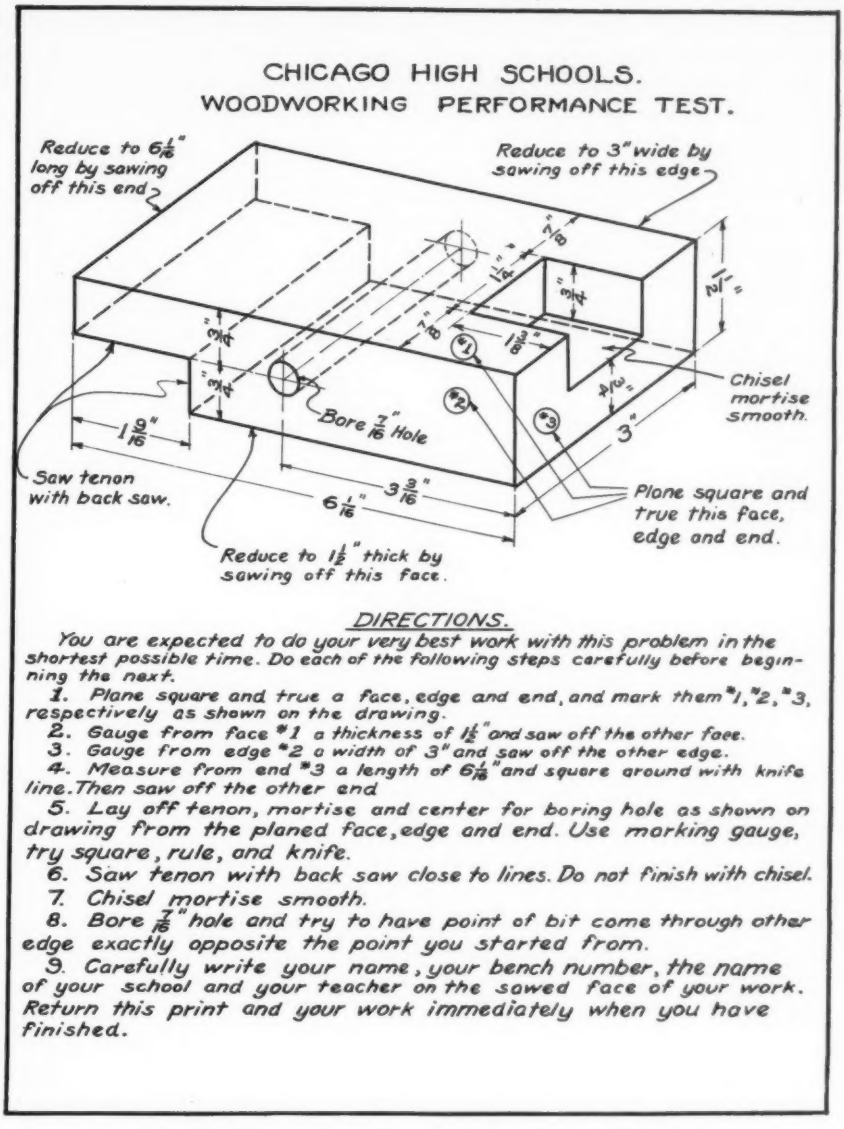

CHICAGO HIGH SCHOOLS.
WOODWORKING PERFORMANCE TEST.
Reduce to 6 1/16" long by sawing off this end
Reduce to 3" wide by sawing off this edge
Bore 7/16 Hole
Chisel mortise smooth.
Saw tenon with back saw.
Plane square and true this face, edge and end.
Reduce to 1 1/2" thick by sawing off this face.
DIRECTIONS.
You are expected to do your very best work with this problem in the shortest possible time. Do each of the following steps carefully before beginning the next.
1. Plane square and true a face, edge and end, and mark them #1, #2, #3, respectively as shown on the drawing.
2. Gauge from face #1 a thickness of 1 1/2" and saw off the other face.
3. Gauge from edge #2 a width of 3" and saw off the other edge.
4. Measure from end #3 a length of 6 1/16" and square around with knife line. Then saw off the other end.
5. Lay off tenon, mortise and center for boring hole as shown on drawing from the planed face, edge and end. Use marking gauge, try square, rule, and knife.
6. Saw tenon with back saw close to lines. Do not finish with chisel.
7. Chisel mortise smooth.
8. Bore 7/16" hole and try to have point of bit come through other edge exactly opposite the point you started from.
9. Carefully write your name, your bench number, the name of your school and your teacher on the sawed face of your work. Return this print and your work immediately when you have finished.

FIG. 1. TRADE SKILL TEST AS USED IN THE CHICAGO HIGH SCHOOLS.

In addition to the oral and written tests, the army also developed a number of standardized tests for measuring trade ability. These tests are largely tests of skill and trade information. The methods of approach, the types of problems devised, methods of scoring, and the ratings give us an excellent key to similar research problems in the field of manual arts.

An attempt has been made in the Technical Department of the Chicago high schools to apply some of the methods used in the army mental and trade performance tests. The fundamental principles and operations required in the courses of woodworking, printing, machine shop, foundry, etc., were analyzed and tests were then devised based upon the theory and practice of each of these subjects. The subject of woodworking, because there were approximately six thousand boys enrolled in this course, received the greatest attention.

In order to arrive at anything that approaches the standardizing of a test, it is obvious that a tryout must be made under conditions which would be approximately normal. This preliminary study, of course, would mean that a test should be tried out for the purpose of correcting and revising it, before a more comprehensive study could be attempted. For this reason, the Austin high school, a co-educational school with a large membership of average Americans, was selected.

Two kinds of tests were devised: a trade knowledge test and a trade skill test, and these in turn were checked up against a general intelligence test, which had already been standardized by the University of Chicago. The first preliminary test was made on two

distinct groups of freshmen students, the first consisting of 45 general course pupils who had attended high school for a year without taking any technical work, and the second group of 44 technical course pupils who were just completing a forty weeks' course of one and one-half hours per day of woodworking.

The trade knowledge test (see accompanying specimen sheet No. 1) consisted of a set of twenty statements which required the pupil to fill in the proper answer in order to complete the sense. In the trade knowledge test, an attempt was made to sink shafts of research into a variety of mines of information relating to the theory of the proper use of woodworking tools, wood finishes, kinds of lumber, manufacture of lumber, botany of trees, etc. The general intelligence test consisted of ten exercises requiring different mental reactions, such as determining: "opposites," "missing steps in series of numbers," "proverbs," "analogies" and "selecting best reasons." The trade skill test consisted of a practice problem (Fig. 1) which required the use of all the principal bench work woodworking tools. The purpose in this test was to find out how much accuracy and technique each student had in the use of bench woodworking tools. The problem devised for this performance test had to be necessarily of small dimensions for it was to be used universally, and, therefore, the amount and cost of lumber should not be prohibitive.

Simple and short explanations were given before each test, after which the pupils started and worked without any further assistance until ordered to stop. The two written tests were given on the first day and the skill performance test on the following day. Nine minutes were allowed for completing the trade knowledge test and seventy minutes for the trade skill test, thus making a total of 89 minutes. It would perhaps have been better if all three of the tests could have been made on the same day, but we were limited to the use of a regular shop period of ninety minutes in order not to interfere with the rest of the school program and of course preparation and explanation of each of the tests is not included in this 89 minutes, net.

The scoring of each of the tests was done by three different people according to a scale which had been determined as being a reasonable standard. The results of the gradings were then compared and an average struck off which in turn resulted in changing the predetermined scale. In the trade skill test, each tool performance was carefully weighed and checked a number of times because it was found that the standards of accuracy set by the first committee were too high and so had to be revised. In the scoring of the trade knowledge test it soon became evident that the boys' vocabulary was rather indefinite and that they often used a variety of words to describe some definite thing. Therefore, a count had to be made of what the boy was trying to say, rather than having him give the exact words.

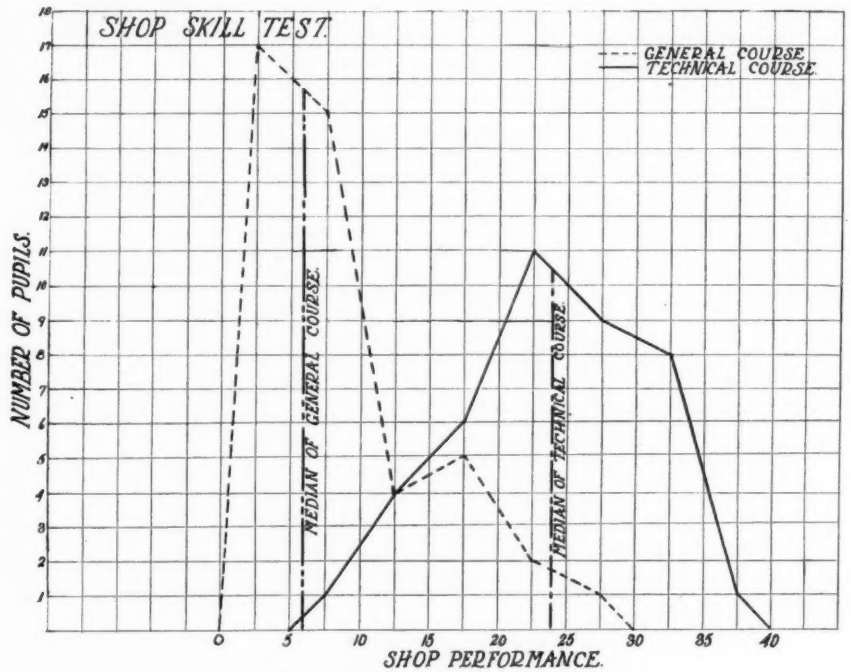


FIG. 2. RESULTS OF SHOP SKILL TEST.

After the scores had been completed, the data was gathered on sheets and tabulated, and three different graphical curves were plotted to show the performance of each of the two groups (Fig. 2). By studying these graphs it was expected that some facts would be presented which would show something as to the amount of knowledge and skill which the technical boys were acquiring during their one year of study, which the general course pupils had not obtained. The purpose was also to find out the real value of each question and performance required, whether it was too easy or too hard.

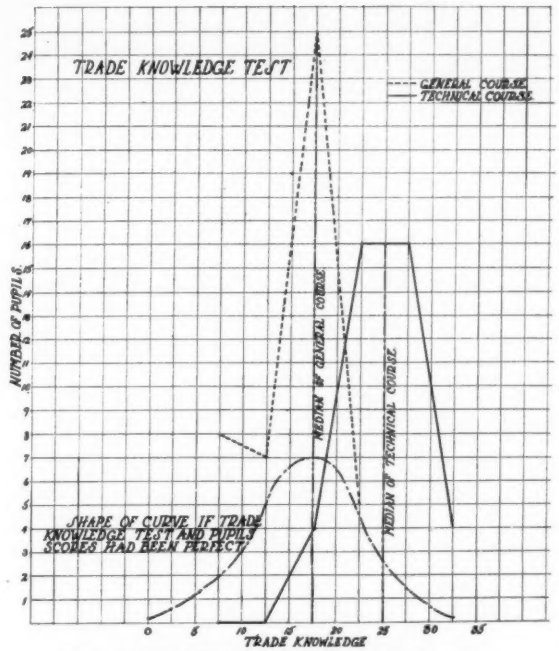

TRADE KNOWLEDGE TEST
GENERAL COURSE
TECHNICAL COURSE
NUMBER OF PUPILS
MEDIAN OF GENERAL COURSE
MEDIAN OF TECHNICAL COURSE
SHAPE OF CURVE IF TRADE KNOWLEDGE TEST AND PUPILS SCORES HAD BEEN PERFECT
TRADE KNOWLEDGE

FIG. 3. RESULTS OF TRADE KNOWLEDGE TEST.

From the data secured from this preliminary study we found, from the Chicago University General Intelligence Test,[2] that the boys taking the technical course had about the same general intelligence as the boys who were taking the general course. By inspecting the two plotted graphs of this test, one will see that the median of the technical course boys was 2.25 points higher than the general course boys, that is, 48 as compared to 45.75. The standard median as determined by the makers of the Chicago Intelligence Test for Tenth Grade Pupils is 47. A hasty inspection of the graph would lead one to think that the technical boys were of higher intelligence than the general course boys, but this can be explained by pointing to the average age of the general course pupils, which is 15.04 years, as compared to the average age of the technical boys, which is 15.61 years, the difference being about one-half year. It was also noted that the technical course boys were physically larger than those of the general course. The conclusion arrived at was that the boy in both the general and technical courses at the Austin high school were about of the same general intelligence.

The trade-knowledge test proved to be too easy, and so a revision was made when this test was used in a number of other schools. It was found in this first trade knowledge test that out of a possible 33 points, the median of the technical-course pupils was 25, when it should have been 17. Strange to say, the median of the general-course boys was 17.5, which told us that this trade-knowledge test would have been better adapted to entering high school students who had had a year of manual training work in the grades. A tabulation was made of the number of rights for each question and a rank order was devised ranging from easy to difficult. It was found that the questions ranked as follows: Nos. 10-19-7-13-4-2-6-18-17-8, median, 12-15-11-14-9-5-3-16-1-20. This ranking arrangement showed that questions to the left of the median had to either be increased in difficulty or entirely eliminated and other questions substituted which required more technical knowledge. This was done, and new questions were taken from the trades of carpentry, cabinet making, wood turning and pattern making. (See accompanying revised specimen test.)

The trade skill test proved to be quite satisfactory and required little revision with the exception of changing some of the scoring standards. There was a range of forty points allowed on this test. Inspection of the plotted graph will show that there was a great difference as to the relative amount of technique and skill which the technical boys had acquired in woodworking practice for one school year of one and one-half hours per day as compared to the general course pupils. The median of the technical-course boys was 23 as compared to the median of the general-course boys, which was six. The difference in the skill between the two medians, 23 and six, or seventeen points, tells its own story, as a quantitative measure of skill performance. Experience with this test would suggest that either the standards of accuracy demanded should

[2]Chicago Group Intelligence Test, Freeman-Rugg, Form B, University of Chicago.

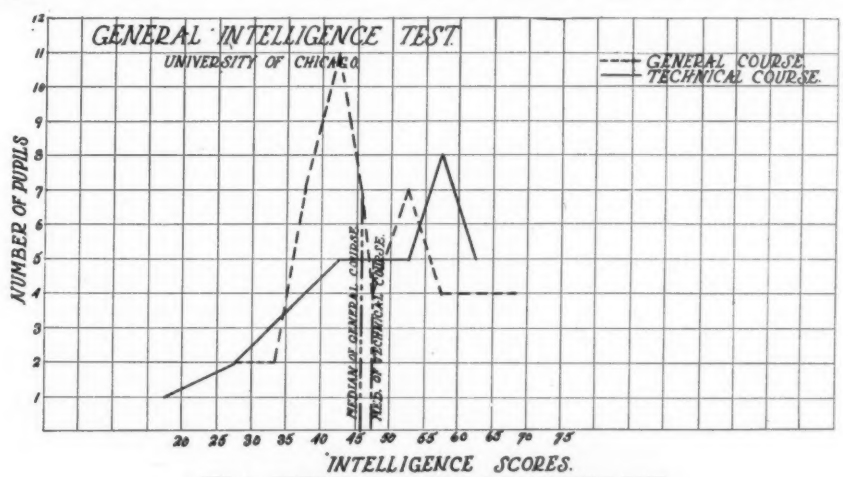


FIG. 4. RESULTS OF GENERAL INTELLIGENCE TEST.

be raised a little higher, or the time of performance, seventy minutes, be cut down. This would increase the requirements and necessarily move the median for the technical boys from 23 to twenty, where it should be. Inspection of the test wood blocks showed that, although the general-course pupils were able to shape the problem in a general way according to plan, they were, however, totally unable to work to definite sizes. This is significant because the test of any good mechanic is determined by his ability to do an accurate job of neat appearance in the shortest possible time with the least amount of waste material. The technical boys approached this standard but the general-course boys did not.

To determine the coefficient of correlation in any study of this kind a sufficiently large number of cases must be had in order that probable error may become a negligible factor. Usually a minimum of 300 cases is considered acceptable. In this preliminary study only 85 cases were considered and, therefore, any deductions made, considering the coefficient of correlation, must necessarily be discounted. However, computations were made and the following scale of correlation coefficient is submitted for each of the two groups of boys:

	Gen. Intell. and Trade Skill	Gen. Intell. and Trade Knowledge	Trade Skill and Trade Knowledge
General Course Boys.....	—.07	.15	.11
Technical Course Boys...	—.09	.33	—.09

The negative correlations between general intelligence and trade skill is what was expected in this study because of the different kinds of intelligence.

However, John L. Steinmetz of New York claims that there should be a small positive correlation instead of a negative one. The positive, .33 correlation between general intelligence and trade knowledge for the technical-course boys is not high enough, and the same is true of the correlation between trade skill and trade knowledge. The —.09 for the technical boys in this last correlation appears to be a contradiction which this preliminary study cannot explain.

Similar tests were given in twelve other high schools of Chicago, but in these latter cases, the cooperation of the teachers in each of the schools was required because of the herculean task of grading and sorting hundreds of tests. The results from these tests have not been computed as yet. However, the results from a professional standpoint have been most satisfactory. At first, some of the teachers regarded this study with suspicion because they thought that this was a procedure for showing up a teacher's inefficiency and to increase his work. However, after the tests were made and the teachers had an opportunity of assisting in scoring the papers, they soon became interested in the problem and recognized that this sort of an inventory would be of help to them in determining standards of attainment.

In general, some of the professional applications of this attempt at determining standards have been the recognition of their uses in the field of manual arts, such as: (1) the measurement of progress of classes and individual pupils; (2) the comparison of classes with each other and with the standard; (3) the classification of pupils on the basis of ability; (4) the determination of the relative merit of two methods of teaching the same subject; (5) the setting up of different and better goals of attainment for teachers and pupils alike; (6) the discovery of individual abilities and interests.

TRADE KNOWLEDGE TEST FOR WOODWORKING

Pupils should fill in the blank spaces by supplying the correct missing word.

1. The ..... is used in general to lay off lines along the grain parallel to a given face or edge.
2. The ..... is used to saw a board with the grain.
3. In withdrawing a 30 penny nail from a board with a hammer a ..... is used to make the work easier and to avoid breaking the handle.
4. Water is used on a grindstone when grinding a plane blade to prevent the steel from .....
5. The ..... is used to saw a board into short lengths.
6. The ..... and ..... are used to bore a $\frac{3}{16}$" hole in a block of wood.
7. In planing a board we find the surface continues to be rough and broken and so we conclude that we are planing ..... the grain; to correct this we should ..... the board.
8. In planing the end of a board we prevent the further edge from splitting off by ..... it.
9. To properly glue the boards of a table top together we should use ..... glue, and hold the board together with .....
10. In what order should I use the following so as to make a rough hardwood board smooth; sandpaper, plane, scraper? ....., ..., ...
11. We use a ..... to close up the pores of an oak taboret before applying a finishing coat.
12. The finishing coat which is most generally used in a manual training shop to keep a piece of work clean is ..... dissolved in alcohol.
13. We use ..... to protect the steps of a porch from decaying, and we use ..... on a beautiful outside oak door to protect it from the weather.
14. We have a stock of lumber containing white pine, spruce, white oak, maple, and red cedar. In the following list of articles fill in the blank after each, kind of lumber you would use in building them.
    Aeroplane.....
    Clothes Chest .....
    Kitchen Floor .....
    Library Table .....
    Window Sash .....
15. The small nails which are used in holding small and thin pieces of wood together are called .....
16. The part of a smoothing plane that moves the blade sideways is called .....; and the part that moves the blade in or out is called .....
17. Logs are cut into boards at the ..... mill, and the boards are made smooth at the ..... mill.
18. ..... trees have needles and ..... trees have acorns.
19. The best time to cut trees for the market is in the ..... time when the ..... has ceased to flow in the trees.
20. We use a ..... to drive the head of a nail below the surface of a piece of wood.

REVISED TRADE KNOWLEDGE TEST FOR WOODWORKING

Pupils should fill in the blank spaces by supplying the correct missing word.

1. The ..... is used in general to lay off lines along the grain parallel to a given face or edge.
2. The teeth of a ..... saw are filed square across, while the teeth of a ..... saw are filed at an angle of 45°.
3. In withdrawing a 30 penny nail from a board with a hammer a ..... is used to make the work easier and to avoid breaking the handle.
4. Two reasons for using running water on a grind stone while grinding a chisel are to ..... and to .....
5. In turning a piece of wood between centers the part that is forced into the wood and makes it go around is called the .....
6. In patternmaking an allowance is made for the shrinkage in iron castings of ..... per foot.
7. In spindle turning fillets are cut with a ..... and beads are turned with a .....

8. In planing the end of a board we prevent the further edge from splitting off by .....
9. To properly glue the boards of a table top together we should use ..... glue, and hold the board together with .....
10. What finer cutting tool should you use on curly grained hard wood after you have finished using the smoothing plane? .....
11. We use a ..... to close up the pores of an oak taboret before applying a finishing coat.
12. Shellac is made of ..... dissolved in .....; while varnish is made of ....., ..., and .....
13. Four general classes of stains are used in cabinet making according to the liquid used to hold the coloring matter, which are (1)....., (2)....., (3)....., (4).....
14. We have a stock of lumber containing white pine, hemlock, white oak, maple and poplar. In the following list of constructions fill in the blank after each, the kind of lumber you would use in building them.
    Roof rafters .....
    Turned floor lamps.....
    Kitchen floor .....
    Library table .....
    Pattern of pulley .....
15. The small nails which are used in holding small and thin pieces of wood together are called .....
16. The part of a smoothing plane that moves the blade sideways is called .....; and the part that moves the blade in or out is called .....
17. In order that a pattern may easily be withdrawn from the sand, it must have ..... on its vertical sides.
18. Draw a line through the trees in the following list that shed all of their leaves at a time:
    spruce oak maple cedar basswood
    hemlock pine poplar red gum
19. In specifying lumber, the underlined abbreviations are used to tell what is wanted. Fill in the blank spaces the words for which these abbreviations stand.
    500 bd. ft. of ¾" 1st clear White Oak Q.S. S.S K.D.
    500 ..... of ¾" 1st clear White Oak .....
20. To sink the head of a screw below the surface of a piece of wood we use a tool called a .....; while for the head of a nail we use a tool called a .....

Teaching Art Through Poster Work

Jane Littell, New York City

THAT children enjoy making posters has been proven by their enthusiasm over the contests conducted in New York City, by the American Society for the Prevention of Cruelty to Animals, and the excitement with which the three thousand pupils of the elementary schools greeted the announcement of another contest. Five hundred dollars was divided into 235 prizes.

Some of the posters submitted in the contest were artistic in the extreme and it was hard to believe that they were made entirely by children. One showed a tot of two or three years, carrying a huge umbrella over herself and her tiny dog, and bore lettering which read, "Love me, love my dog." Another showed a black cat on a gray ground, drinking milk from a white saucer, and lettered, "Do a good deed every day." A third showed a child about to give thanks for her bowl of bread and milk, which a small dog in her lap is sampling as she sits with closed eyes and folded hands. The title of this is, "He prayeth best who loveth best, all things both great and small."

Teaching humaneness to animals is, of course, the aim of the contests, but the drawing teachers who supervise the work find children developing a new sympathy for animals and a new interest in the work of the drawing classes through the drawing of these posters.

There are many lessons, as every teacher knows, that are best taught indirectly and three of these are suggested by one group of the posters used for illustrations. A casual explanation of the value of open windows, if it is offered during the class hour when the poster is made, sinks deeper into the child mind at that time because it catches the subconscious mind unaware. At any rate, children seem to seize upon statements made casually, as if not intended for them, with much more avidity than upon facts told to them directly in the form of lessons.

Proportion, line, balance, color—all of the things the drawing teacher is trying to teach—are exemplified

A CHAPEL-WINDOW EFFECT PRODUCED WITH CREPE PAPER.

in poster work. Posters can be very simple, as are the three lettered ones used here, or they can be more elaborate, on the order of the second group—particularly those posters showing the hollyhocks against a white fence, and the gondola.

Any picture, magazine illustration or cover, or any of the printed papers, crepe or otherwise, can be used in making posters. Silhouette pictures, cut out of black paper or light-weight, black cardboard, lend themselves beautifully to the making of posters. There are prepared, cut out, ready for use, gummed back letters, such as those used in the "We do not destroy flowers" poster, which require only arranging in words and moistening to provide the printing. The wording on the bird and window posters was printed.

In all but the two elaborate posters reproduced here, and the copy of the stained glass window, the pictures used were cut out of decorated crepe paper, of which there are many designs, colors, and decorations

CREPE AND TISSUE PAPER POSTERS MADE BY CHILDREN.

for holiday and special seasons. The "Protect the birds" poster shows on a white ground, a bird house cut out of gray cardboard. The bluebirds and the spray of apple blossoms were cut out of a pattern of printed crepe paper and pasted on.

The "Open Windows" poster shows a scene and children cut out of another pattern of printed crepe paper, and a casement window of black cardboard. The "We do not destroy flowers" poster shows a bowl of light tan cardboard, which seems to be filled to overflowing with yellow daisies. A strip of black paper represents the table top, and scattered along it are green leaves cut from the daisy patterned paper.

The background of the hollyhock poster is a scene taken complete from a strip of patterned crepe paper, which covered the upper half of the sheet of cardboard on which the poster was built. The lower half was then covered with plain green crepe paper, matching the green grass in the design. Then the fence was cut out of white cardboard and pasted on. The hollyhocks were made separately, and pasted on.

I wish it were possible to show the colors in the gondola poster. When the group was prepared for the photographer, this one was the prettiest of the six, due to the combination of bright colors. The background was a light blue, perhaps a bit brighter blue than would be used for any but a Venetian sky. The pillars were of gray, banded with shiny gold paper. The three bands of paper that represent the water shaded from the blue of the sky to indigo, and then bluish green. Green leaves, pink and lavender flowers, and gold lanterns on the gray posts, added to the color combination, but unfortunately blues lose their color value when photographed. The black cardboard gondola seemed to bring out the vividness of each of the colors used.

Posters make the best sort of advertisements for school activities. Each advertising poster will feature a different affair. One will tell of a basket ball game, and another of a track meet. These are easiest made of silhouettes, showing figures in action, and for these it will be necessary to draw the patterns.

Here is an opportunity which the drawing teacher can use to stimulate an interest in drawing from life. One of the players in his (or her) uniform will be proud to pose for the figure work, and, since the lesson is something out of the ordinary, the pupils will bring to it a more than ordinary interest. If the class has studied lettering, and the making of simple layouts, the best rough sketch can be turned over to the pupil who does the best lettering. Thus one pupil will do the lettering, another the layout, another the sketch, and still another will cut out the silhouettes from the patterns. Competition adds to the interest, and as a number of posters are needed to advertise a school event, everyone who can do even passable work will get a chance to help.

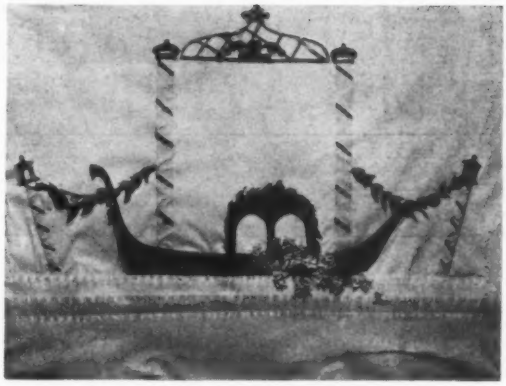
Such posters—inasmuch as their appeal is local, and their general effect something different from the usual printed advertising card—will be displayed in the store windows with much more cheerfulness than the usual announcement. If the poster is attractive enough, and large enough, often a merchant will use it for the main decoration of his window, and fill the remaining space with goods to which the poster will draw attention.

That spark of creative instinct—with which every child is endowed, and which the standardization of education tends to suppress—can be fanned through such work as this, into a blaze that nothing will quench. There must necessarily be some standardization but growing minds require different stimulus, which each one can find for himself if he learns to think for himself. And if the pupil is urged to select the subject for his own poster, or is allowed to picture a given subject in his own way, the teacher is often able to teach the child the value of thinking for himself.

Because the materials for posters need only be assembled, the creative instinct can show itself in arranging them. Then, when the class has progressed beyond mere arrangement, there are many ways of using charcoal, crayons, pen-and-ink, and water colors, in poster making, that will intrigue every member of the drawing class.

Decorations for the class parties offer another incentive to the class to do creative work. Here it is important to take into consideration the wall space which the poster is to cover, so that the choice and size of the cutout pictures can be governed accordingly. There is no limit to the size of posters. They can cover the entire wall of a room, or be built on bits of cardboard a foot square. The most convenient size to work upon is 27″x36″.

Since "patch" posters appeared, a year or two ago, the idea behind the new posters has been adopted by artists working with many different mediums, and the result is that posters are being made and used for every imaginable purpose. One of the most unusual is pictured here. It appeared in a florist's window on Fifth Avenue, at Easter time. A stained glass window was copied faithfully in crepe paper, with black picture binding used between the patches of different colored paper to represent the lead that holds the bits of stained glass together. This, instead of being built on cardboard, was built on cheese cloth, and a small electric light bulb glowing some distance behind it, added to the illusion of glass.



A TISSUE PAPER POSTER.

A CUT-OUT POSTER.

These are only a few of the uses to which posters are put. Doubtless pupils would find many more. Certainly there could be fostered a friendly rivalry between classes, or between schools, in the turning out of athletic posters.

The artistic talents of children in the public schools are to be marveled at. Such exhibits make one wonder what it is that stifles the creative or artistic instinct in so many children, and whether it is not possible to keep it alive in more cases.

CLASS IN AUTOMOBILE BENCH WORK IN THE SCHOOL OF INDUSTRIAL ARTS, TRENTON, N. J.

INDUSTRIAL-ARTS MAGAZINE

E. J. LAKE S. J. VAUGHN
Editors

EDITORIAL

MAKE AND GIVE

Now comes the gift month following the Thanksgiving of November. Having invoiced our blessings and found them sufficient, if not abundant, we get the rare satisfaction of passing a little of them on to others. Having received we may well enjoy the greatef pleasure of giving. This, in short, is the chronology of the holidays.

In distinction to other teachers, the industrial-art teacher has directed the young folks in the making of useful and beautiful things which make splendid gifts. These things may not seem as useful or beautiful to the teacher as they do to the boys and girls who have labored over them. Perhaps they will not be as useful or appear as beautiful to those who receive them as gifts. They have been made beautiful and valuable by personal effort and the gratification of accomplishment.

Young people are instinctively selfish. This selfishness can be overcome only by giving of themselves. A self-made gift has a significant value to the giver. Every coat-hanger, book-rack, or foot-stool becomes a hallowed symbol of Christmas when it is given by the boy or girl who fashioned it.

Let us add the objective of giving to the list of incentives that make the industrial-arts worth while as a school subject.

DEFINITE OBJECTIVES

Each year brings into the discussion of educational methods and procedure some new topic. We have almost forgotten the topics of past years such as correlation and formal discipline. Now programs are incomplete without discussion of "objectives."

Each of these topics seem of especial importance as they are presented. They are essential to the development of right teaching and give subjects for discussions that impress the fundamentals on teachers who are constantly groping for conceptions by which to formulate their work. It is to be hoped that the question of objectives will be fixed in the minds of teachers though it may never be possible to decide on exclusive objectives for each school subject.

The search for definite objectives of kinds of school work which come under the general name of industrial arts has led to some curious analogies and evident repetitions. For example, the leading objective stated in the report of one committee on mechanical drawing is "Creative Imagination." "Creative Imagination" has been the pet objective of teachers of the arts. The development of "Creative Imagination" is presumably one important objective of education.

If when asked by the curious layman why mechanical drawing is taught, the ambitious teacher of mechanical drawing should reply, "Creative Imagination," he may have difficulty in warranting his subject. Mechanical drawing is sanctioned as a part of school work because it acquaints the pupil with the symbols and data of mechanical construction. It has much of arithmetic, geometry and mechanics in it, and may be the best approach to these subjects for some pupils, but is not considered so by those who have the whole school curriculum in mind.

We know teachers who attempt to teach geometry under the title of mechanical drawing and we believe they succeed in that purpose.

We believe also that they neglect the important instruction for which their subject is presented. They should be teachers of geometry.

A school subject can only be warranted by definite objectives.

ENDOWING HIGHER INSTITUTIONS OF LEARNING AND NEGLECTING THE LOWER

There has been a tendency in this country on the part of wealthy men to endow with a liberal hand the higher institutions of learning. No country in the world has received finer expressions of concern and generosity at the hands of accumulated wealth for the cultural progress of the people than has been demonstrated in the United States.

In fact, the funds designed to aid higher education have been so richly endowed that those in charge of them have manifested deep concern as to their utilitarian disposition. Those in authority have within the past year given expression to the increasing difficulties which confront them in determining the wisdom of investment in the light of a promise for commensurate results. The number of young men who have sought the higher institutions of learning as attractive centers for a congenial existence without a serious purpose in life, has increased to a disturbing degree.

But, what about popular education? Does it require the generous encouragement of private wealth? The common answer is in the negative. Popular education is maintained by public taxation. It needs no further aid at the hands of private generosity.

And yet what are the facts? There are thousands of school districts in this country where a high school, a trade school, or a vocational school is badly needed and where such institutions cannot, owing to the limitations of the tax ability of the community, ever be secured. With the expansion of the system of popular education, in order to meet the needs arising out of a changed industrial situation, the public school funds have not only been strained to their utmost, but in many instances the introduction of technical or vocational schools has been an impossibility.

Those familiar with the evolution in our industrial life and the consequent decline in the mechanical skill have approved the thought that the schools of the nation assume the new burden of stimulating industrial efficiency. They have also viewed with satisfaction the services of the schools in recruiting the ranks of those who enter the channels of commerce.

The result has been that the cost of maintaining the schools has never been higher, together with the gratifying fact that their service has never been better or greater. But, this by no means argues that popular education is evenly diffused or that an equal educational opportunity is accorded to all the youth of the land. The areas where meager tax yields do not even permit a first class grade school and where vocational training is entirely out of the question, exist in great abundance.

It must be equally apparent to those who are informed that the future prosperity of the United States will not only depend upon its wealth of natural resources, but also upon its ingenuity and industry in the arts of production. The educational agencies of the land will have to continue to train the youth in the common rudiments, as they have in the past, but also prepare them adequately for the vocational activities they are to enter.

We have been strong in demonstrating inventive genius but exceedingly weak in demonstrating that skill in the mechanic arts which should characterize the great mass of industrial workers. In holding our commercial supremacy among the nations of the earth we shall have to rely as much upon the skill of the factory as we do now upon the fertility of the farm. When the countries of Europe have returned to normal conditions again, and enter upon an intensive scheme of production as well as a highly competitive attitude in world trade, the struggle for supremacy will have arrived. Our share in that world trade will then depend upon the ingenuity, skill and industry of our productive forces at home.

The possessor of accumulated wealth may hold that his millions are the result of an old order of things in which commerce and industry made small demands upon the common schools, but it is equally true that the industrial and commercial interests of the future will owe a larger debt to the country's system of popular education than they will to the colleges and universities. And saying this does not imply any disparagement of the value and importance of the higher institutions of learning.

There are in this country some gratifying instances where men of wealth have donated high schools and technical schools in communities that could not otherwise afford to establish them. There are something like twenty-three high schools which are the gifts of rich men. More schools of the class named, many more, are needed and would tend to fill the great void that now exists and which stands as a barrier to that equality of educational opportunity that the American youth is entitled to.

The obligation to provide public schools and to support them adequately should not be lessened. Nor should that sense of proprietorship which brings the citizenship closer to the schools and which stimulates patriotism and love for country, be in any degree lessened. But, with an uneven distribution of wealth and a variation in the tax ability, the school district which is poor in means and rich in children may be found in great numbers. It is here where the rich man, who is generously inclined and who has a love for the rising generation and a sincere concern in the well-being of fellowman, may make a substantial contribution to the community and thereby add to the well-being of the nation. There never was a more opportune time than now for men of the type mentioned to render a distinguished service to their time.

WHY INDUSTRIAL ART?

Some have not yet realized the full significance of that compound term industrial-art. Some persist in the tiresome statement, to which we have all agreed, that things of industry must be made beautiful as well as useful. This persistent remark implies that use and beauty are distinct qualities. If we could find a name of one word for the subject of our interests we would do so. We are convinced that industry and art are inherent and dependent interests of the subject.

We are engaged in conducting the study of applied design; design of industrial production; design of useful things; design of beautiful things; design of useful and beautiful things. To be beautiful a thing must be useful. The charm of design is a useful commodity to all who have eyes to see with. The beauties of nature are the result of perfect adjustment between creative purpose and fitness to that purpose. Decoration must never destroy or divert usefulness.

Industrial art implies the composition of both industry and art in every commodity. It is, therefore, the most comprehensive term that can be applied to our industries as they should be studied and taught in our schools.

OCCUPATIONAL COOPERATION

It is evident that when the boy or girl passes from the school into modern economic life, he or she will be called upon to cooperate with others in the consideration of common problems. Political citizenship is of tremendous importance, but is not its effectiveness materially enhanced by the occupational citizenship of the man who does his bit in his daily work not only with skill, but with intelligence and social understanding as well? Hence, we must emphasize the necessity of learning to cooperate by genuine applied cooperation in a natural social environment, the school. Anything else is mere dramatization!—*E. R. Collier.*

INDUSTRY LOOKS TO SCHOOLS FOR HELP

"It is becoming perfectly clear that one of the principal difficulties in connection with the apprenticeship problem is the attitude of the young men themselves in this day and generation which leads them to shy at those occupations which require manual work and the wearing of overalls. There has also grown up a decided distaste towards the term "apprentice" as involving some sort of servitude and loss of dignity."

This paragraph serves as the introductory to an editorial in the Heating and Ventilating Magazine for August. The editor deplores the shortage of skilled help in the industry which he serves and quotes from a committee report which suggests the remedy.

The conclusion here is that the educational agencies must come to the rescue. The editor says: "In connection with definite textbook instruction, the committee suggests that as the public schools in most of the large cities are designed and equipped to give to these young men the necessary technical instruction, it should be the purpose of the local committee to arrange with the head of the public school system for such instruction."

MAKING LAST-MINUTE CHRISTMAS GREETING CARDS.

Robert F. Salade, Philadelphia, Pa.

SAY "Merry Christmas" to your relatives and friends with personal greeting cards lettered by yourself. The average person will require only a few dozen cards to cover his or her mailing list, but by the process described in this article as many cards may be produced as desired, and the cost will be comparatively low considering the quality of the work. The making of Christmas cards is an excellent problem for any class in lettering and for any school print shop. In planning the message for the greeting card an original piece of copy should first be prepared. The sentiment may be in the form of a verse or of a friendly greeting. The verse style is always the more interesting, although a simple message sincerely worded will invariably please the recipient. Some persons versify very easily and can invent a neat poem for their Christmas card, but the muses do not readily answer the call of all so a prose paragraph which expresses the writer's thoughts in a truthful manner must usually suffice.

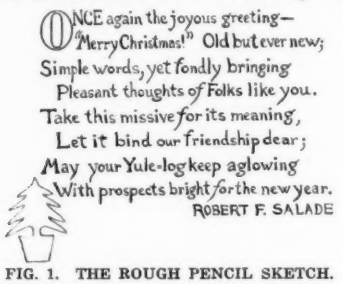
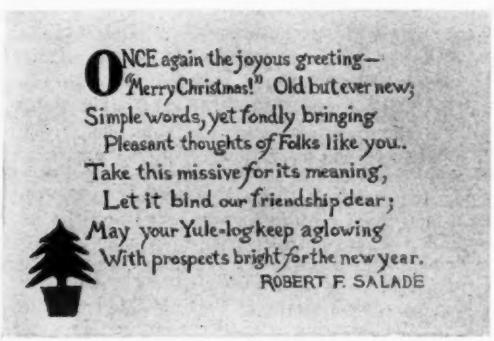

ONCE again the joyous greeting—
"Merry Christmas!" Old but ever new;
Simple words, yet fondly bringing
Pleasant thoughts of Folks like you.
Take this missive for its meaning,
Let it bind our friendship dear;
May your Yule-log keep aglowing
With prospects bright for the new year.
ROBERT F. SALADE

FIG. 1. THE ROUGH PENCIL SKETCH.

After having written and re-written the copy until it is in the best possible style for the purpose, the next step is to prepare for the hand lettering of the characters. This may be done either on a sheet of white cardboard or on a sheet of any plain hard paper. The lettering should be done about three times larger than it is to appear on the completed greeting cards. However, it is not essential to be accurate about the size. If the lettering is somewhat larger than the card is intended to be the difference can readily be overcome in the making of the plate.

Suppose the size of a greeting card is 6"x4". With a pencil and rule draw on the sheet of stock to be lettered a hair-line frame 18"x12" or in size similar in proportion to the card. Then draw faint lines for the lettering, leaving a blank margin of three inches inside the frame.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ROBERT F. SALADE

FIG. 2. THE COMPLETED CARD MADE FROM FIG. 1.

For each line of lettering three pencil lines should be made, the top and bottom lines to determine the height of characters like "H," "h," "I," "i," etc., and the center line to fix the height of characters like "a," "c," "e," etc. A blank space is then to be left between each series of three lines—just enough space to slightly separate the various lines to be hand-lettered. It may be necessary to rub out some of the pencil lines and re-mark them before the spacing is correctly done, but with a block of art gum that is a simple matter.

With the lines correctly placed the copy is then roughly lettered with pencil. This should be done very carefully to eliminate the possibility of mistakes in tracing and spelling. The lettering should be outlined very faintly, but it is necessary to spell words carefully and to work out the entire sketch just as it is expected to appear finally.

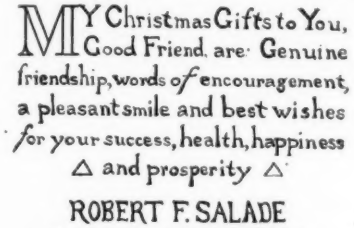

MY Christmas Gifts to You,
Good Friend, are: Genuine
friendship, words of encouragement,
a pleasant smile and best wishes
for your success, health, happiness
△ and prosperity △
ROBERT F. SALADE

FIG. 3. THE ROUGH SKETCH.

Now for the actual lettering. You may follow your own ideas as to the style of lettering, but work to make every character clear-cut and easy to read. In any good book on lettering the standard shapes of the capitals can be studied. Carefully follow the penciled characters with the pen and drawing ink. A quaint style of lettering will present a more artistic appearance than lettering done exactly like type printing. Every person has an original style of lettering which will prove itself as the work is done. No two persons' lettering will be exactly alike. Your craftsmanship will be expressed by your hand lettering, and if your lettering is somewhat rugged so much the better for the purpose of a greeting card.

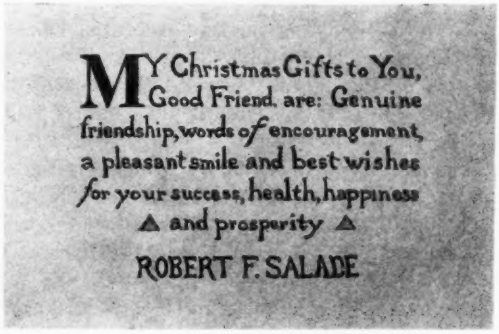

MY Christmas Gifts to You,
Good Friend, are: Genuine
friendship, words of encouragement,
a pleasant smile and best wishes
for your success, health, happiness
△ and prosperity △
ROBERT F. SALADE

FIG. 4. THE CARD DEVELOPED FROM FIG. 3.

After the pen-and-ink lettering has been completed, eliminate all of the lead pencil marks and the drawing is then ready for a photo-engraver. A reproduction, known as a zinc etching, is to be made from the sketch by the photo-engraving process. Any photo-engraving firm will make the plate at modest cost. Note that your drawing is supposed to occupy a space of about 12 x 6 inches on a

FIG. 5. A CARD TO BE COLORED.

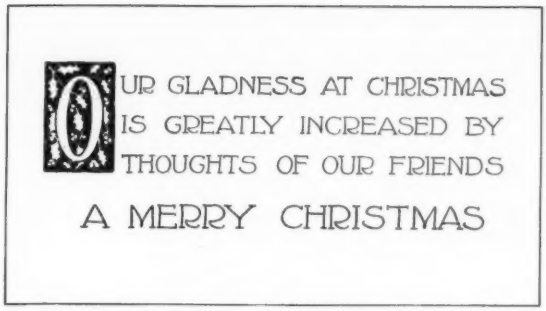


FIG. 6. A SIMPLE CARD.

sheet 18 x 12 inches. A smaller size reproduction of the drawing is to be made so that a printing plate will be provided for the size of the greeting card. For example, the plate could be made to the size of 4 x 3 inches to print on a card size 6 x 4 inches. These figures are given as suggestions. You can select a size card to suit your taste and can have the photo-engraving made to an appropriate size for the card.

Paper merchants carry stock for greeting cards in many different sizes, colors and grades. Any school print shop can obtain cards to meet the tastes of any individual.

The sketch can be made in such a manner as to include the outlines of an initial letter, ornaments and decorative pieces such as a small pine tree in a pot, holly leaves and berries, poinsettia flower, etc. These outlined features will be reproduced in the photo-engraving and will show lightly in the printing. With water color paints and a brush, or with colored crayons, you can illuminate the printed cards harmoniously. The printed outlines make it easy for you to apply the color in the proper places. The outline of a decorative initial letter can be illuminated in several colors. The outlines of holly leaves and berries can be painted green and red. You can doubtless think of other subjects which could be hand-colored to advantage.

Printed outlines of initial letters, ornaments, pine trees, flowers, etc., can be clipped from the pages of magazines. The clippings can then be pasted on the hand-lettered drawing in the desired positions. When the photo-engraving is made these outlined subjects will be included in the reproduction.

HIGH SCHOOL HAS CHRISTMAS SALE

The accompanying picture gives an idea of the work done in the Lovington, Ill., Township High School for Christmas. At the time the picture was taken many articles were still under construction and others had been delivered. This bit of work proved very interesting and the department was favorably advertised over a rather large area.

The following plan was used: Each boy in the department was asked to select plans for and make a particular article for the sale (many selections were made from old issues of this magazine). The articles were then made on the project basis. When completed they were placed on display in a down town store window and for ten days orders were received by the firm and turned over to the instructor. The boys were then divided into groups and assigned certain articles to make. There were orders for as many as two dozen of some articles. This permitted the boys, under a foreman selected from each group, to work on a quantity production basis.

All articles were called for or delivered before Christmas and the results were very gratifying. Aside from the educational value, about $75 were cleared and will be used to further the work of the department. C. H. Dalton was in charge of the work.

PRACTICAL STUCCO WORK FOR HIGH SCHOOL BOYS

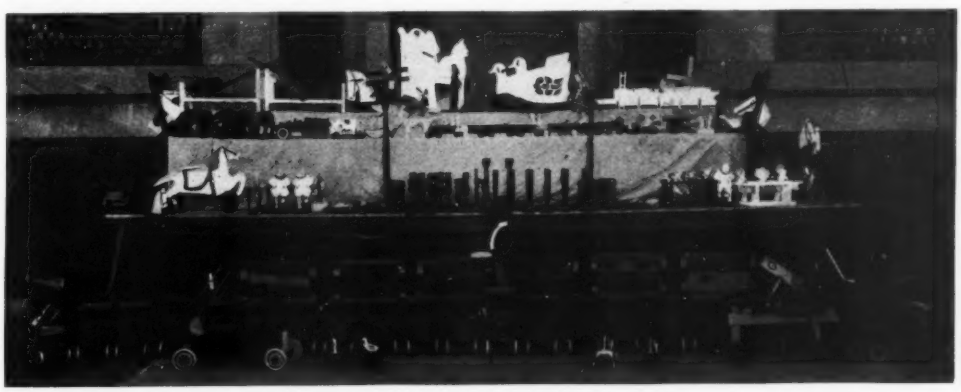
Hyrum Jenkins, Shop Instructor, Tintic High School

During the beginning of last school year I decided to try some stucco work with my shop class. The weather was such that everybody wanted to be outside the classrooms. In order to get practical experience I got a number of people living near the school to permit us to cover their house foundations with stucco. Most of the houses here are frame with no cement foundations. I convinced three people that stucco would make their homes much warmer and would also add beauty to them. We decided to do the work if the owners would furnish the materials.

The term "stucco" means nothing more than exterior plastering, either plain or ornamental. Stucco is a mixture of one or more cementitious materials, with sand or other fillers, and with or without such materials as hair or coloring matter. We have no equipment in our school shop for stucco work, so it was necessary for each boy to furnish some part of the needed equipment. Some furnished shovels, some hoes, one boy a sand screen, another a wheelbarrow, some trowels. We made wooden floats and mortar boxes in the shop.

As soon as our equipment was collected we spent a few days making a study of stucco. We studied the sand in our locality, the different metal lath on the market, the best grades of lime and cement, and the different mixes to use on the job. We made a number of tests and looked up what information we could get on the subject. We forgot everything else and centered attention on the problem of stucco. We were now ready to start.

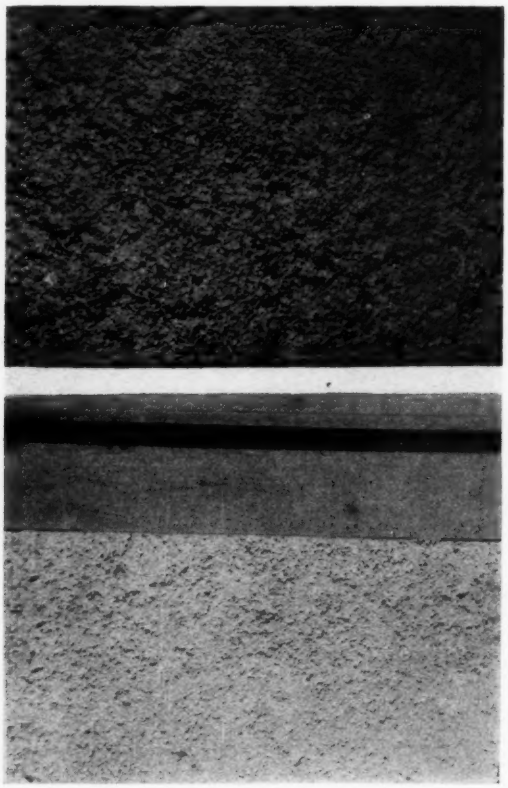
Our classes are drawn from the senior high school and are composed of fifteen boys each. There were too many in each class to try to use all at the same time on the same job, so we divided the classes into two parts, working one part of the class while the other part looked on. The part that looked on took its turn, and so we provided experience for every boy.



TOYS MADE FOR CHRISTMAS SALE BY STUDENTS OF C. H. DALTON, MANUAL TRAINING INSTRUCTOR, TOWNSHIP HIGH SCHOOL, LOVINGTON, ILLINOIS.

THE FIRST BIG STUCCO JOB WHICH THE CLASS UNDERTOOK.

We covered the wooden foundations with heavy building paper and then furred over this paper with wooden lath strips twelve inches apart. We nailed metal lath very securely over these wooden strips. We also ran a water table above the foundation, to prevent rain and moisture from getting behind the stucco. We screened the sand and mixed it dry with cement—three parts sand to one part cement—until the entire mass was uniform in color, then added enough water to make a workable mix. The less water used within working limits the better the quality of mortar. In order that the mortar would spread more easily we added a little hydrated lime, about one-tenth the amount of cement.



ABOVE—THE FIRST ATTEMPT BY A BOY.
BELOW—A LATER JOB BY THE SAME BOY.

Just enough work was planned for each period of ninety minutes. The succeeding classes commenced where the preceding one left off. Each boy had a turn at every operation, from screening sand to spreading mortar. The responsibility was placed on the students, and each felt it was his duty to do good work. It was interesting to note the "pep" shown by the boys.

We did three-coat work, allowing a day between first and second coats, and two or three days between second and third. We kept the stucco damp so it would set properly without dry-out. The boys had a little trouble with the first two or three batches of dash but after that they did very well. I supervised all the work but the boys got the experience of doing it.

Before we had finished the three foundations a patron of the school, who had been watching us at work, offered us the job of placing stucco on his house. This was a big job to consider, and it took us two days to decide. He offered to pay the boys a small amount, so we decided to do the job. Here was a chance to work all members of the class at the same time, so I put them in groups of fives, and placed them so one group didn't interfere with the other groups.

It didn't take long to cover the building with paper and lath. Because of a large surface the boys could do the work with more speed. All the work was examined before any stucco was applied, and I insisted that every strip and every piece of lath be securely nailed. We discovered that six common nails bent over worked better and faster than staples in nailing on metal lath. We built our own scaffolding and did all the work that had to be done on the job.

As the work progressed we found that we couldn't always finish the alloted space during the class period, so we found it necessary to stay after school to finish. We also worked on Saturday. The boys were willing to do this so long as I was with them.

We did three-coat work on this job, and every boy feels so proud of the work. The place is improved in appearance. We gave it a spatter dash finish, using the screenings from the sand as the dash. We made the foundation a little darker than the rest of the house by leaving the lime out of the finish coat.

Several days we were unable to work on the job so we spent the time in the classroom figuring the cost of every item, writing papers, looking up information, and making reports. We got more information and more practice in three months of working under normal working conditions than we could possibly have got in a year in the shop.

MONOGRAMS AND CIPHERS

Ray Matasek, Milwaukee, Wis.

The first monograms appeared on early Greek coins, seals and medals and also on the coins and seals of Macedonia and Sicily. From that time on they have been the distinguishing mark of many artists and craftsmen. They are being used today for many different things such as letter heads, trade marks, jewelry, and for marking personal belongings.

Although both the monogram and cipher are commonly called by the same name, monogram, there is, however, a difference which should be noted. A cipher is a device in which the separate letters are placed one with the other but not having any part or parts in common. The well designed cipher is generally more pleasing than a monogram and also easier to design.

A monogram is a device in which the letters have a part or parts in common. It can be seen then that a monogram is more intricate and therefore more difficult to construct.

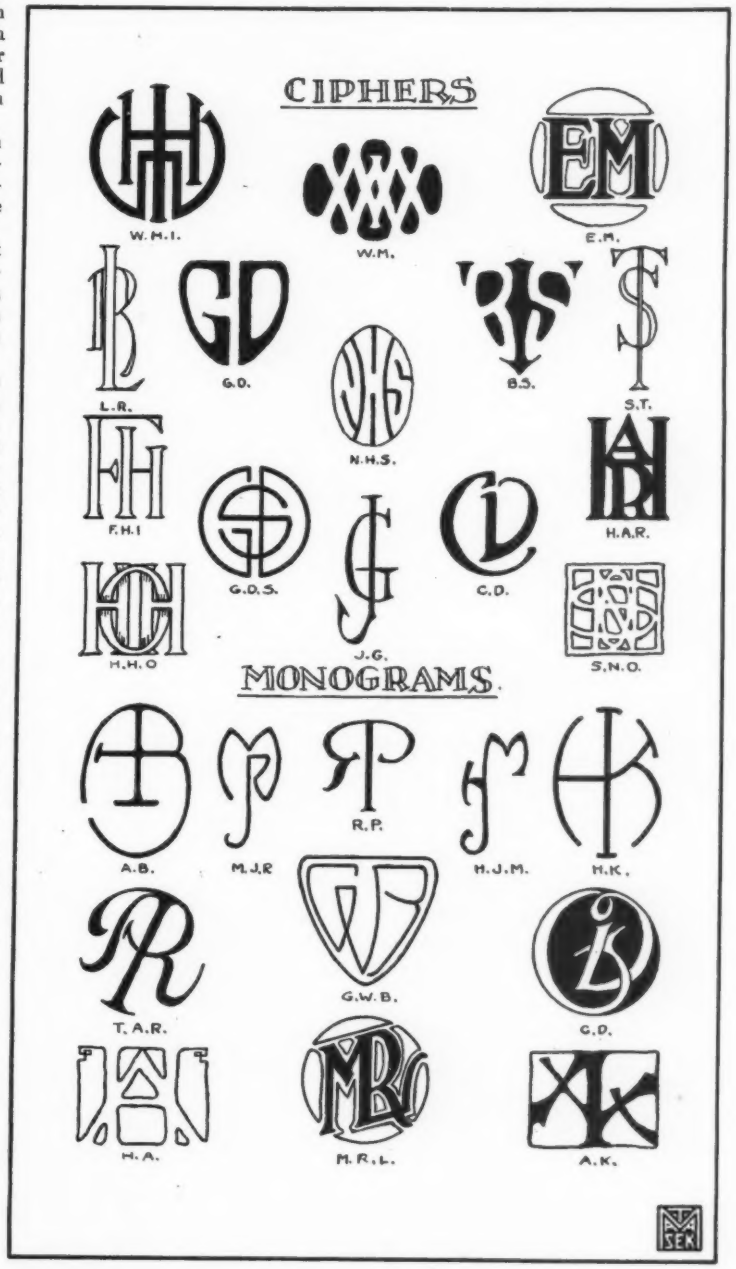
There is often an advantage in first of all deciding on some definite geometrical form and then arranging the letters to fit that space. Letters in monograms may be reversed as the letters R. P. is the device for Rookwood Pottery.

A monogram sometimes becomes just a distinguishing mark or ornament, legibility being of second importance. This should, however, be avoided as much as possible. The perfect monograms should be very legible and simple in design. The laws of balance symmetry, unity, etc., should be applied here as well as in any other branch of design. The important letter should be the most dominant one in both position and size. In personal monograms and ciphers the most important initial is the last one.

A good way to begin is to make simple single stroke letters of the initials to appear in the monogram or cipher and study these letters for common strokes. They should also be studied to see if they can be reversed, or if the letters are symmetrical. After all these points have been decided upon and it is known what kind of space the monogram is to fill, it is a good plan to start with the Roman letter and try to fill that space pleasingly. If after a half dozen trials or so, it is found that the Roman letter will not work, the student can try any of the other alphabets such as the Script, Uncial or Italic.

Care must be exercised in deciding what kind of a monogram is to go on certain material. A monogram on a ladies' ring for instance would not be the same as a monogram for the trade mark of a machinery company.

Designing monograms and ciphers is a severe test of the commercial artist's skill and originality but as they are very fascinating the student will undoubtedly enjoy every minute he spends on them. The accompanying plate shows some designs of ciphers and monograms.



BASSINET

Work of Jackson, Michigan, Night-School Basket Class Instructor—Mrs. D. B. Fox. Made by Mrs. F. A. Bennett

The bassinet is one of the most unique projects attempted by the class, yet simple to construct. It may be varied as to shape and size also style of weaving. In general the procedure is as follows:

(A) *Frame.* White pine bottom is made of one inch material, three feet long, 17" wide, with all corners rounded. Legs are also made of pine 17" long and 4½" in circumference. However, if more rigidity is desired, they may be constructed of oak. A 1⅛" by 4" board is fastened to the under side of the bottom at both ends, into which four holes are bored and the legs glued. Running diagonally from each of the four legs and crossing each other in the center are 2 3/16" iron rods, which lend strength and rigidity to the bassinet. Each two legs at the ends are further supported by an axle rod ⅜" in diameter and into which five inch disc rubber tire wheels are attached.

(B) *Legs.* In wrapping the legs the material, 4/32" weaver, is tacked at the bottom of each leg, tightly

wrapped and then tacked again at the top. Next wrap the diagonal iron rods, tacking each end on the inside of the leg in the small space left open where the rods are put through the legs. Any little ingenious design may be made in the center.

(C) *Body.* In building up the body, 4/32" wire stakes are used, and tacked on the frame ¾" apart, using in all 134 stakes. An even number must be used in order to form lattice effect. Any desired length of stake may be used, according to style and shape of body. This particular style measures 13" at the middle, 17" at the head, and 16" at the foot when finished. In addition, about 12" more was added to the stake to form the border at the top. More or less may be added for border according to the style of border used. The amount of stake below the wooden bottom leaves the skirt five inches in the middle, seven inches at the head, and six inches at the foot when finished. Then nine inches is added to the above amounts to make the finished border at the bottom, thus making the stakes 39" long at the middle, 45" long at the head, and 43" long at the foot. Any book on reed work will give several methods of weaving-in the body, but the method used here is triple-twist weaving, giving firmness and solidity to the bottom. Seven rows of triple are used. The first row of lattice effect is then made by crossing any stake over the next one, either to the right or left. Tieing these firmly with cord or heavy thread will aid greatly in keeping them in the correct position. This is followed by seven rows of pairing weave. The next lattice effect is secured by carrying one stake over the next two stakes, and followed by five rows of pairing. The remainder of the lattice work and weaving are made the same as previously.

The skirt is made by weaving five rows of triple twist. Then to make the lattice effect, carry any stake at the left over three consecutive stakes at the right. This edge is held in place by three rows of pairing.

(D) *Borders.* (a) The skirt. The border at the bottom of the skirt was made by crossing any stake over the next stake to the right and pushing it firmly up through the weaving beside the stake.

(b) *Top of Body.* The border around the top of the bassinet is made by crossing the first two stakes at the left back of the next two stakes, bringing it out in front. Continue this all the way around the top before the next process is attempted. Next take the ends of these two stakes and push them through the first opening out to the front. Lastly, the two stakes are brought up back of the two stakes and coiled around nd pushed down beside the next two stakes. Any strong and durable border might be substituted.

(E) *Braid.* The edge of the board and the tacks are covered with a braid, which has been braided separ- two stakes and coiled around and pushed down beside the weavers as in ordinary braiding. If extreme care is taken, the ends of the braid may be tacked in place so as to be entirely invisible. In all tacking on of braid, use a nail set, in order to hide the nails as much as possible.

(F) *Accessories.* On either side of the body at the head end, three loops are made of the stake material and fastened into the top part of the body. Three rods go over the body and fasten into these loops and are wrapped with weavers. The one nearest the head measures 40" long, the second, or middle one, 44" long, and the third 48" long. A small handle is made of stake material and tacked under the bottom and wrapped with weaver. Any length of handle may be used, according to size desired.

BASSINET.

(G) *Finish.* There are several different ways of finishing the project. The art-fiber should be given a thin coat of glue sizing after the project has been finished and before any finishing materials are applied. This sizing stiffens the material and makes it impervious to water, as well as giving it a proper surface for finishing and preventing the finish from rubbing or chipping. For sizing use one part of ground animal glue mixed with two parts cold water. Stir until it becomes a thick paste. Let this stand fifteen minutes, then add water slowly, stirring constantly to keep it from becoming lumpy. Add enough water to make a thin solution which will run freely. Apply with a brush. Cover every particle of art-fiber, using great care to work sizing into all crevices. Dry thoroughly before proceeding further.

This sizing was followed by two coats of flat white under-coating. When dry one coat of white enamel was applied. For drying 48 hours were allowed between each coat of finish, including the sizing.

A BENCH CLASS IN ELECTRICAL MOTOR WINDING AT THE LANE TECHNICAL HIGH SCHOOL, CHICAGO, ILL.

PROBLEMS & PROJECTS

This department aims to present a wide variety of class and shop projects in the Industrial Arts. Successful problems are invited and will be paid for. A brief description of constructed problems, not exceeding 250 words in length, should be accompanied by a good working drawing. The originals of the problems in drawing and design should be sent.

Problems in benchwork, machine shop practice, turning, pattern-making, sewing, millinery, forging, cooking, jewelry, bookbinding, basketry, pottery, leather work, cement work, foundry work, and other lines of industrial-arts work are desired for consideration. The editors will not accept the old hackneyed problems of footstools, taborets, towel holders, etc., which have been made from time immemorial, ad nauseum.

INTERESTING ORNAMENTAL METAL WORK

A. F. Bick

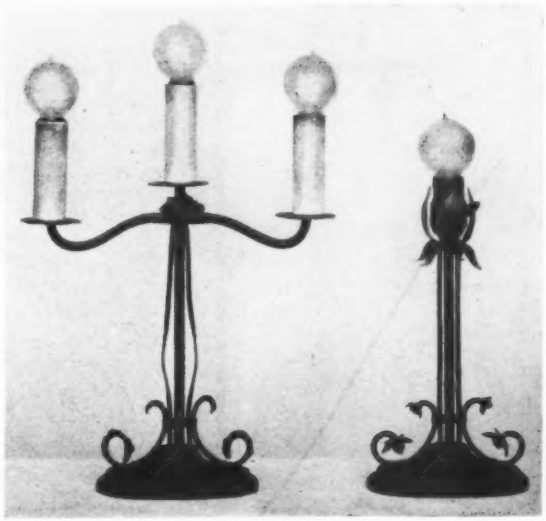
The work illustrated was made in the Milwaukee Orphan Home shop by boys eleven to fourteen years of age. It represents metal work which was begun recently to fill the need for a more comprehensive type of manual-arts with vocational guidance as its purpose. The boys have wood work at a neighboring city grade school.

Special equipment for metal work was made in class by the boys. They constructed a gas blow torch with foot bellows, a drill press, wood mallets and metal hammers of various shapes, scrapers, chasing tools, and chisels. A few tools, such as cutting pliers, taps, dies and files, were bought.

The processes with which the boys become familiar in this branch of metal work are related to the most important metal trades. As the opportunities present themselves, these trades are discussed, especially as to their standard of work, processes, and equipment.

Special tools and jigs are devised and made as they are needed to cope with the constantly appearing problems. The boys not only gain a knowledge of the principles underlying tool making, but being challenged repeatedly by the unfamiliar situations, they are thrown on their own resources, which in a marked degree develops their habits of thinking.

It would require too much space to give the reader an idea of the subjects touched upon in the classwork. I will, therefore, only briefly explain the steps involved in making the three light lamps standard in Fig. 1.



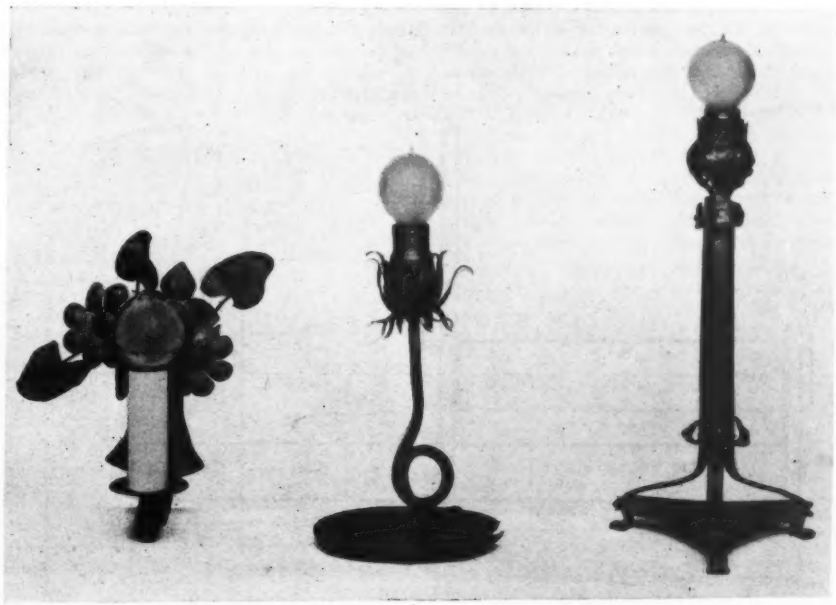
ORNAMENTAL METAL LAMPS BY STUDENTS OF THE AUTHOR.

The base was cast at a local foundry from a pattern made by the instructor. It was reamed and taped by the boys for the central tube, and drilled for the ornaments and cord. The vertical tube was threaded on both ends, and filed open on both sides, one inch from the top, to furnish an outlet for the wires leading into the arms.

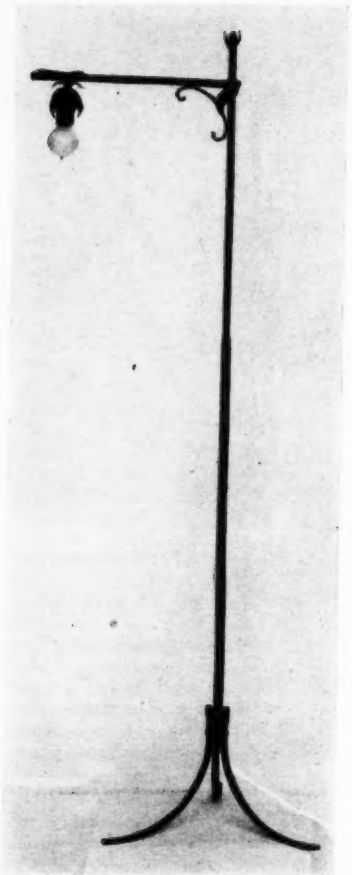
The arms were bent to conform to the pattern, the tube having been filled with rosin to prevent kinking. The tube was then cut into at the center and spread open so as to slip over the vertical tube to which it was soft soldered.

The disks under the candle fixtures are held in place by collars soldered to the tubes just under the threads.

All of the ornamental iron was of 3/16 inch round stock. The pieces running parallel with the center tube were beaten quite flat and bent outward in the middle. At the top, they were bent so that, with the copper leaf which later was attached, they covered the tube joints. The iron



TYPICAL ORNAMENTAL LAMPS PRODUCED BY STUDENTS OF MR. A. F. BICK.



ORNAMENTAL METAL LAMP—
A. F. BICK.

scroll pieces below were bent in a jig and had copper leaves soldered to each of their ends.

The copper work was made of eighteen gauge stock. The material was annealed and beaten to shape in the end grain of a block of wood with small hammers and chasing tools made for this work. Natural forms were copied.

The finish was in an antique green. It is apparently copper oxide, but it was done with a flat paint of a bright green hue. Most of the color was removed with a rag immediately after the lamp was covered, leaving a film on the surfaces which would be naturally worn and deeper color in the grooves, joints and low spots.

A DEVICE FOR TEACHING FILING.

O. D. Rickly, Instructor, Ohio State University, Columbus.

Those who have had experience in teaching beginners how to file are aware of the fact that most beginners give the file a rocking motion which results in the surface being convex instead of flat. This rocking motion is due, of course, to the student's lack of control over the ever varying pressures of the hands on the ends of the file. With consistent practice the tendency to rock the file is gradually eliminated.

To illustrate the above and also to permit the student to see for himself what he is doing, the device shown in the accompanying drawing was made. It consists simply of a square shaft "S" which has been turned down at the ends to fit the bearings in the supports "A" and "B". To one end of the shaft is attached a pointer "P" which moves over the scale on support "A."

To use the device it is placed in a vise and the student is asked to file over the square shaft with a blank file. If he moves the file straight across and horizontally the pointer will remain fixed at O. If he moves the file straight but at an angle with the horizontal the pointer will remain fixed at some position on either side of O, depending upon the angle. If previously mentioned rocking motion is given to the file the pointer will of course move back and forth over the scale.

A HOME MADE PANTOGRAPH.

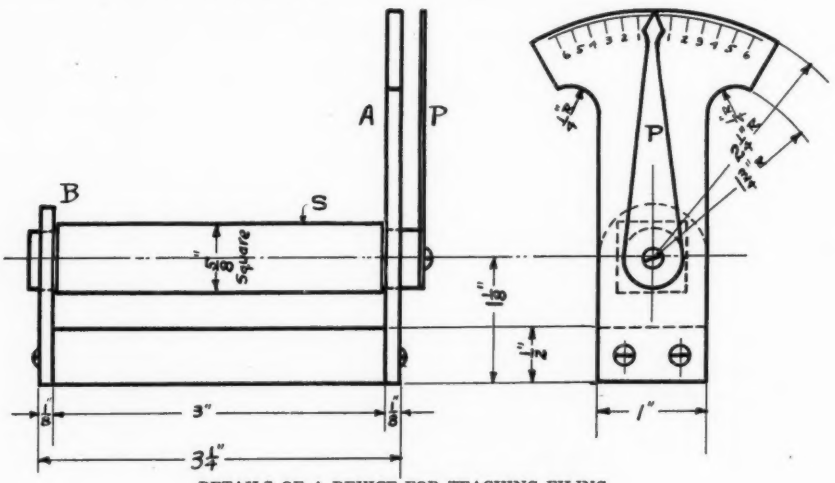
Charles W. Frost, St. Paul, Minnesota.

A pantograph is a very useful instrument for enlarging (or reducing) maps, embroidery patterns, photographs of athletes for school posters, and many similar purposes.

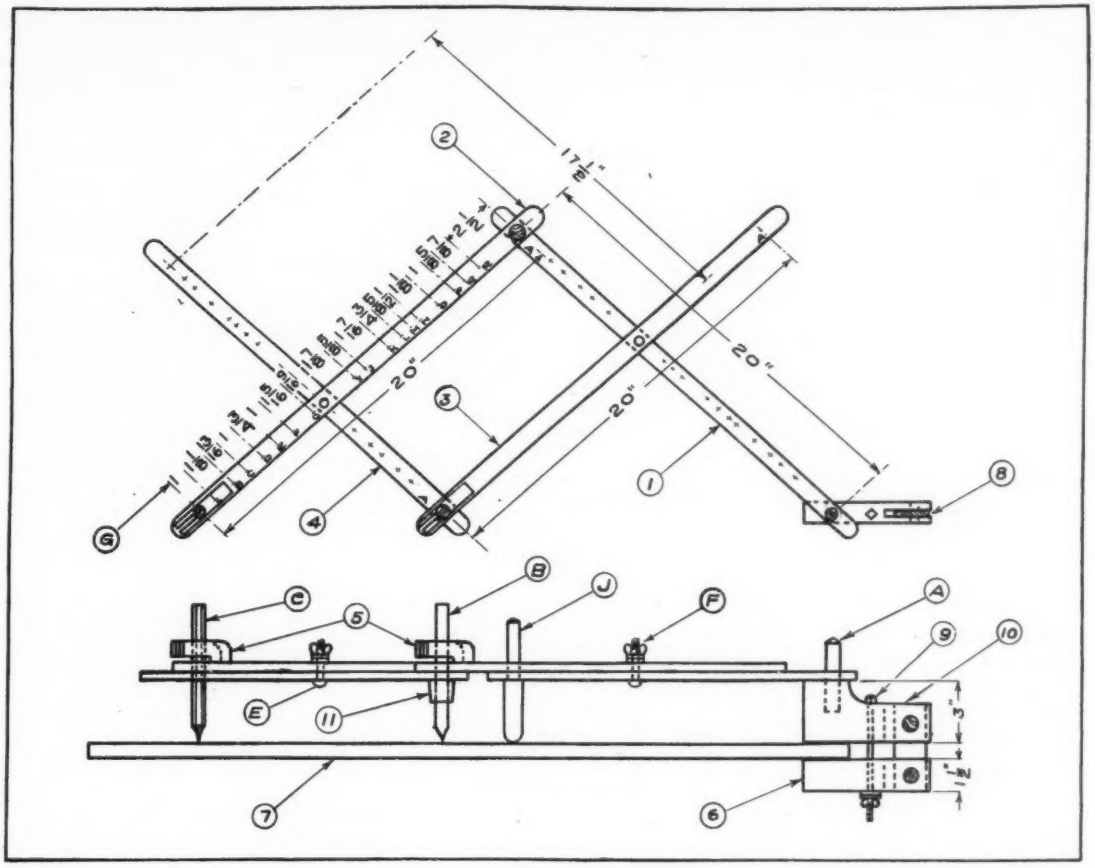
Those usually found in the stores are either too expensive for the average school or, on the other hand, are unsatisfactory because of their weak construction and inconvenient arrangement of pencils. This "home made" pantograph costs less than any on the market, but in some respects is *superior* to all but the most costly.

The method employed holds the pencils so rigidly that it is possible to do accurate work with the frame high enough above the paper to allow the pencil to be grasped in a *natural* manner *below* the bars. No portion of the drawing is hidden by the frame, as is the case when using the cheaper factory made instruments, whose feeble construction renders it necessary to keep them close to the paper.

The clamp forming the base for the pivot upon which the pantograph works is quite rigid, and makes it possible to use the machine upon either a common drawing board, or a table top without marring their surfaces with thumb tacks.



DETAILS OF A DEVICE FOR TEACHING FILING.



DETAILS OF A HOME-MADE PANTOGRAPH.

Papers can be fastened to the surface of the latter with pieces of mending-tissue such as that used by librarians in repairing books. This is easily removed by moistening.

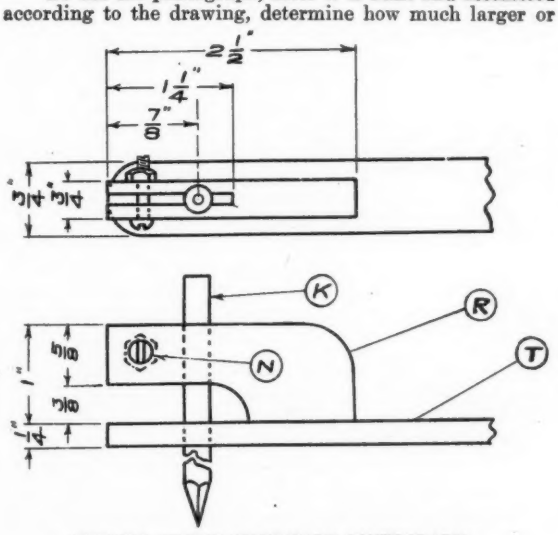
The manner of building and assembling the pantograph is clearly shown in Figure I, and requires no explanation further than a word of caution to be careful to make the holes in the various bars (through which the pencils and pivot pins are inserted), in the right ends in each case.

To use the pantograph, after it is built and assembled according to the drawing, determine how much larger or smaller the copy is to be than the original. Find in the table below the proportion desired, then connect with bolts "E" and "F" the holes correspondingly lettered in bars 1 and 3, 2 and 4.

For instance, if it is desired to enlarge a drawing six times, connect bars at the holes numbered "Q"; fasten a sheet of tracing paper over the drawing to be enlarged, and trace the latter with pencil "B," Figure 1. The copy made by pencil "C" will be six times as large as the original.

To *reduce* the size of a drawing, simply trace around the original with pencil "C" instead of pencil "B." Pencil "B" then makes a copy one-sixth as large as the original.

The tracing point should be a very hard pencil, 6H or 8H, sharpened to a fine needle point. The copying pencil should be quite soft, but for especially fine work a 3H drawing pencil may be used weighted with half a dozen quarter-inch washers upon it, *above* the frame.



DETAILS OF THE HOME-MADE PANTOGRAPH.

Names of Parts of Pantograph.

Figure 1. Assembly drawing of pantograph.

1. } Bars of frame.
2.
3.
4.
5. Pencil clamps.
6. Pivot clamp.
7. Drawing board, or table top.
8. Clamp hinge-leaf.
9. Clamp locking bolt.
10. Clamp hinge-pins.
11. Rubber bottle stopper.

A. Pivot pin.
B. Tracer pencil.
C. Drawing pencil.
E. Connecting bolt.
F. Connecting bolt.
G. Distances between centers of connecting bolt holes.

J. Support rod.

Figure 2. Details of pencil clamp.

N. Pencil clamp bolt.
K. Pencil.
R. Pencil clamp.
T. End of frame bar.

Table of Proportions.			
1=Original Drawing.			
A=1÷1 1/8	or 1×1 1/8	I=1÷2	or 1×2
B=1÷1 1/5	or 1×1 1/5	J=1÷2 1/8	or 1×2 1/8
C=1÷1 1/4	or 1×1 1/4	K=1÷2 1/2	or 1×2 1/2
D=1÷1 1/3	or 1×1 1/3	L=1÷2 3/4	or 1×2 3/4
E=1÷1 2/5	or 1×1 2/5	M=1÷3	or 1×3
F=1÷1 1/2	or 1×1 1/2	N=1÷3 1/4	or 1×3 1/4
G=1÷1 2/3	or 1×1 2/3	O=1÷4	or 1×4
H=1÷1 3/4	or 1×1 3/4	P=1÷5	or 1×5
		Q=1÷6	or 1×6
		R=1÷8	or 1×8

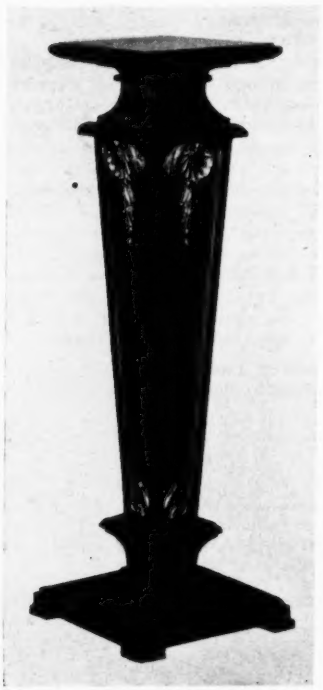
FRENCH RENAISSANCE PEDESTAL

A. S. Madsen, State Normal School, Milwaukee

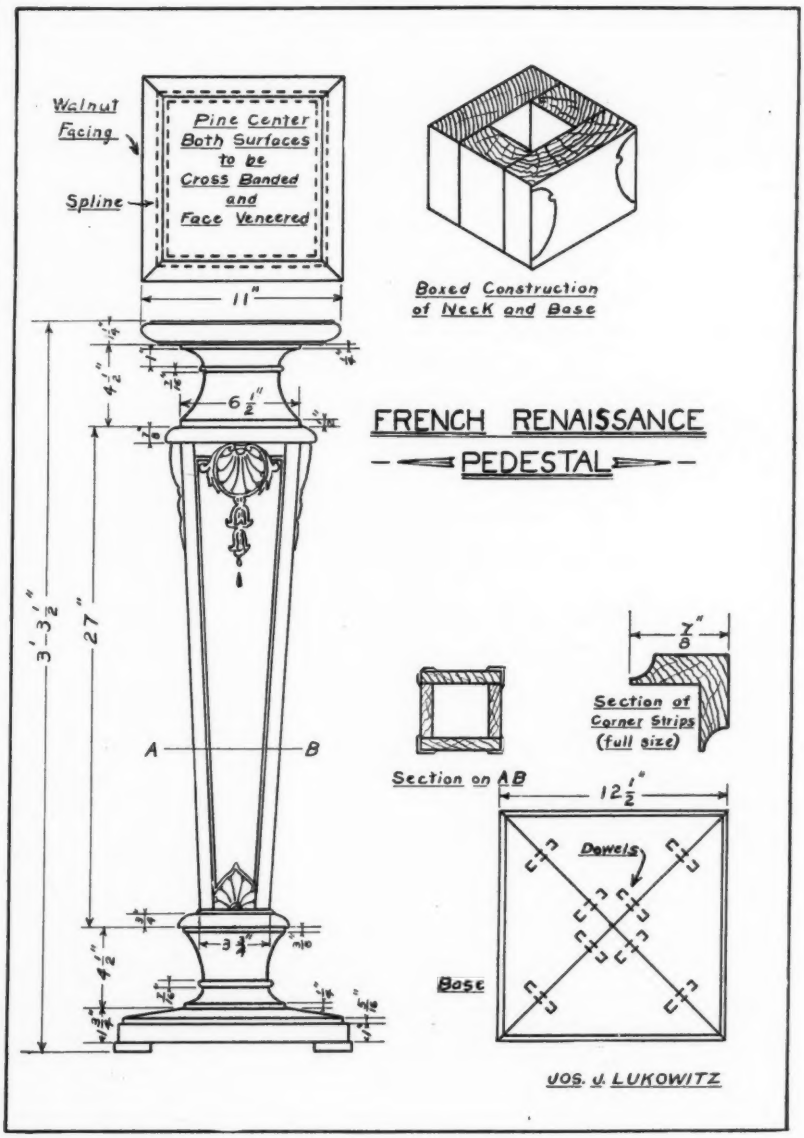
The accompanying drawing illustrates a project designed and built of walnut by Mr. Joseph Lukowitz, a student. This project is especially strong on the cutting and fitting of mitres.

Although the average high school boy usually dislikes mitering, here is a problem that would be an incentive for him, for the boy will feel that the finished product is worth the patient effort which he may expend in mitering.

The jointing of the neck and base and the sawing and smothing of the curves is another good problem. The top is of soft wood, striped with walnut cross, banded and face veneered to make it five ply. The molding on the top was cut by hand and the cove on the corner stripes was cut with a half round plane. Suitable carvings may be purchased, but the making of simple carvings would illustrate to the whole class the possibilities for surface or panel enrichment, at the same time also demonstrating that the wood is a very expressive medium. Although a large proportion of the class may lack the ability to do carving, seeing the work develop will in many cases create a stronger appreciation for work of an artistic character.



THE COMPLETED PEDESTAL.



CENTER-BORING A POST

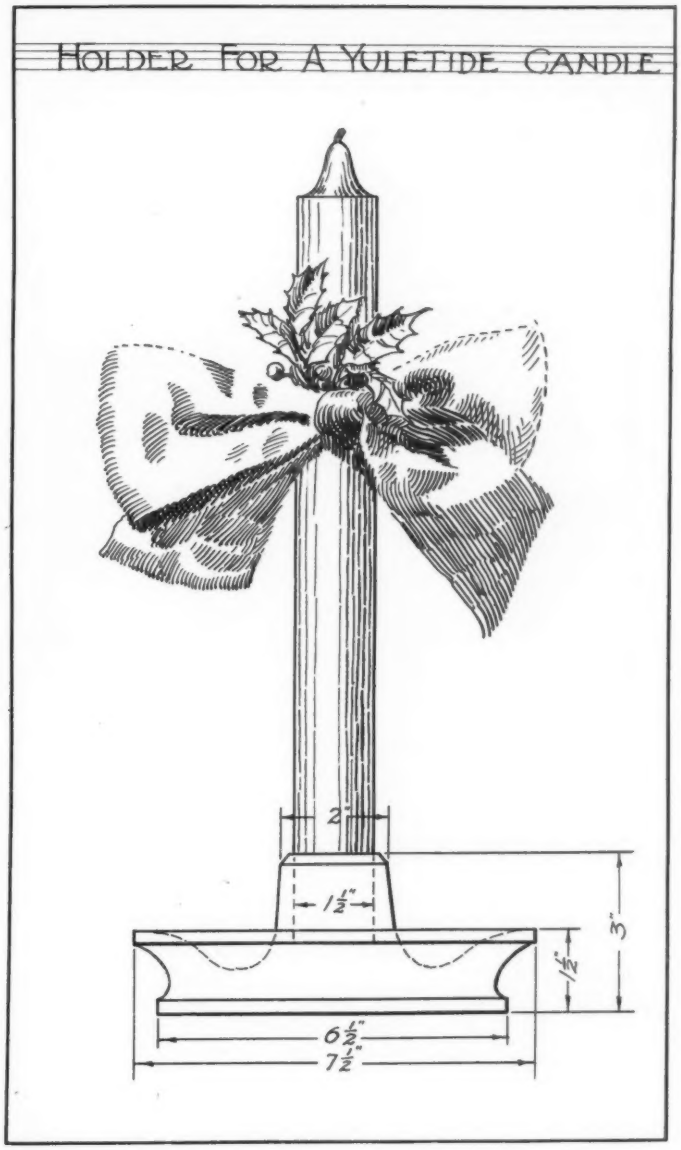
J. W. Bollinger, East Junior High School, Sioux City, Ia.

This method of boring a hole through the center of a square post is one which came within the writer's observation recently, and merits publication.

The usual difficulty encountered in boring a hole through a post is that of keeping the hole centered. The ordinary method of boring almost invariably results in the bit running off to one side. The following procedure solves the difficulty nicely:

Mark the center of the hole, clamp the post in the vise, and begin boring as usual. After making half a dozen or more turns with the brace, take the piece out of the vise, revolve it a quarter turn, and make several more turns with the brace. Then remove the wood again, revolve it a quarter turn in the same direction as before,

YULETIDE CANDLE HOLDER AND CANDLE.



DETAILS OF A CANDLE HOLDER.

and drill a little farther. Continue revolving the piece every few turns of the brace until the hole is completed. In practically all cases the hole will not be more than a sixteenth of an inch out of true with the center. Holes bored from opposite ends will meet nicely.

YULETIDE CANDLE HOLDER

H. J. Wieland, Turning and Pattern Department, Vocational High School, Virginia, Minnesota

As Christmas time approaches, it is not inadvisable to take advantage of the opportunity to draw upon the enthusiasm and interest which always accompanies this season, and if possible add some of this interest to our shop work. An element that is quite largely instrumental in imparting what we are want to call the Christmas Spirit, is the theme of decoration that has been universally adopted for this time. Along with the holly, mistletoe and evergreen decoration, the candle has been used and it is for a large red candle that the holder herein described has been designed.

Directions for Making

Stock—Gum, Poplar, Mahogany or Walnut.

1 piece—2"x8"x8".

1 piece—2"x3"x3".

Ribbon 2½" wide and 36" long (color green).

1 small sprig of holly.

1 candle (Standard Oil Co. Yuletide No. 1110.)

For *Gum* and *Poplar* stock: Stain mahogany and polish with shellac.

For *Mahogany* stock: One coat of ammonia, 1 coat of white lead and polish with white shellac.

For *Walnut* stock: One coat of white lead and follow with white shellac polish. When applying white lead, give about 10 minutes time before wiping off. Leave a thin coat on the job and follow with a polish pad, dipped in shellac. One application of this finish produces a high polish, one that will not dull or come off in handling.

(1) Spot glue the 3" piece on the center of the 8" piece and cross the grain.

(2) Fasten to face plate and turn to shape.

(3) Place a chuck in tail stock with suitable size forstner bit and bore hole. Sandpaper and finish as given above.

(4) Face bottom with green felt. Insert candle, tie bow and fasten holly branch in place to suit.

ELECTRIC GLUE HEATER.

Frank P. Wentzel, Manual Training Department, Clearfield, Pa., High School.

It was the intention of the writer, to make a heater that would keep the glue warm enough for using during the day after it had been boiled upon a gas range.

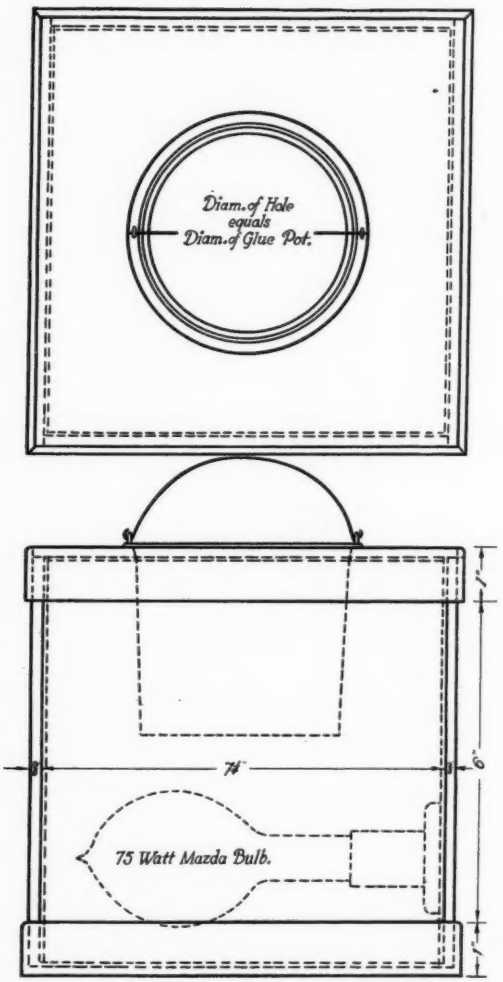
In our department we do not have gas, which made it quite necessary to go into one of the other departments

in the school building to heat our glue, when we needed it.

Upon experimenting, the writer has found that by putting the cold glue (in the pot) as it becomes when left over the night, in this box, that, within two hours afterwards the glue is steaming hot, and remains that way during the day, just so long as the electric light is burning.

This box was made of ⅜" white pine, nailed together and lined with asbestos, after which the moulding was nailed on.

ELECTRIC GLUE HEATER



A cord running from an electric light fixture into the socket within the box and lighting a 75 Watt Mazda Bulb is sufficient to heat, and after being heated, will keep the glue steaming.

It might be a good plan to fasten this box to a bench or a table to prevent being knocked off.

A PROGRESS RECORD CARD FOR VOCATIONAL (SHOP) SUBJECTS.

G. H. Snaddon, Detroit, Mich.

This card was designed for use in classes in machine shop practice although it is suitable for use in other shop subjects. By its use each student keeps a careful daily record of his work and progress. Periodic and final grades are based on this record.

Such a card as this eliminates guess from the marking system. The student can clearly see that the mark

STUDENT'S PROGRESS RECORD CARD

Name_____ Age_____ Grade_____

Subject_____ Course_____ Hour_____

No.	Project	Mark	Score	Instr's Check	No.	Project	Mark	Score	Instr's Check	No.	Date Began	Date Finished	Total Hrs.	Time Rating
1					11					1				
2					12					2				
3					13					3				
4					14					4				
5					15					5				
6					16					6				
7					17					7				
8					18					8				
9					19					9				
10					20					10				

- Insert Time Daily -

1st Semester							2nd Semester						
Wks.	M	T	W	Th.	F	Wks.	M	T	W	Th.	F	Wks.	M	T	W	Th.	F	Wks.	M	T	W	Th.	F
1						11						21						31					
2						12						22						32					
3						13						23						33					
4						14						24						34					
5						15						25						35					
6						16						26						36					
7						17						27						37					
8						18						28						38					
9						19						29						39					
10						20						30						40					

1. Include only the actual working time spent on each project or job.
   (a) Use the letter a to represent absence
   (b) Represent tool crib assignments by the letters T. C.
2. The marks used have the following values:
   1 or A or excellent - 95 to 100.
   2 " B " good - 85 to 94.
   3 " C " fair - 75 to 84.
   4 " D " poor - 70 to 74. Not passing marks.
   5 " E " fail - 0 to 69.
3. Determine your score by dividing the mark by the total time.
   Examples: Score = 96 mark / 10 total hrs. = 9.6
   Score = 100 mark / 62 total hrs. = 1.6

or grade he receives is the result of his own efforts and not entirely estimates of his instructor. He is responsible for determining his own mark and consequently his score. A high score requires a good quality of finished work in reasonable time for grade and age.

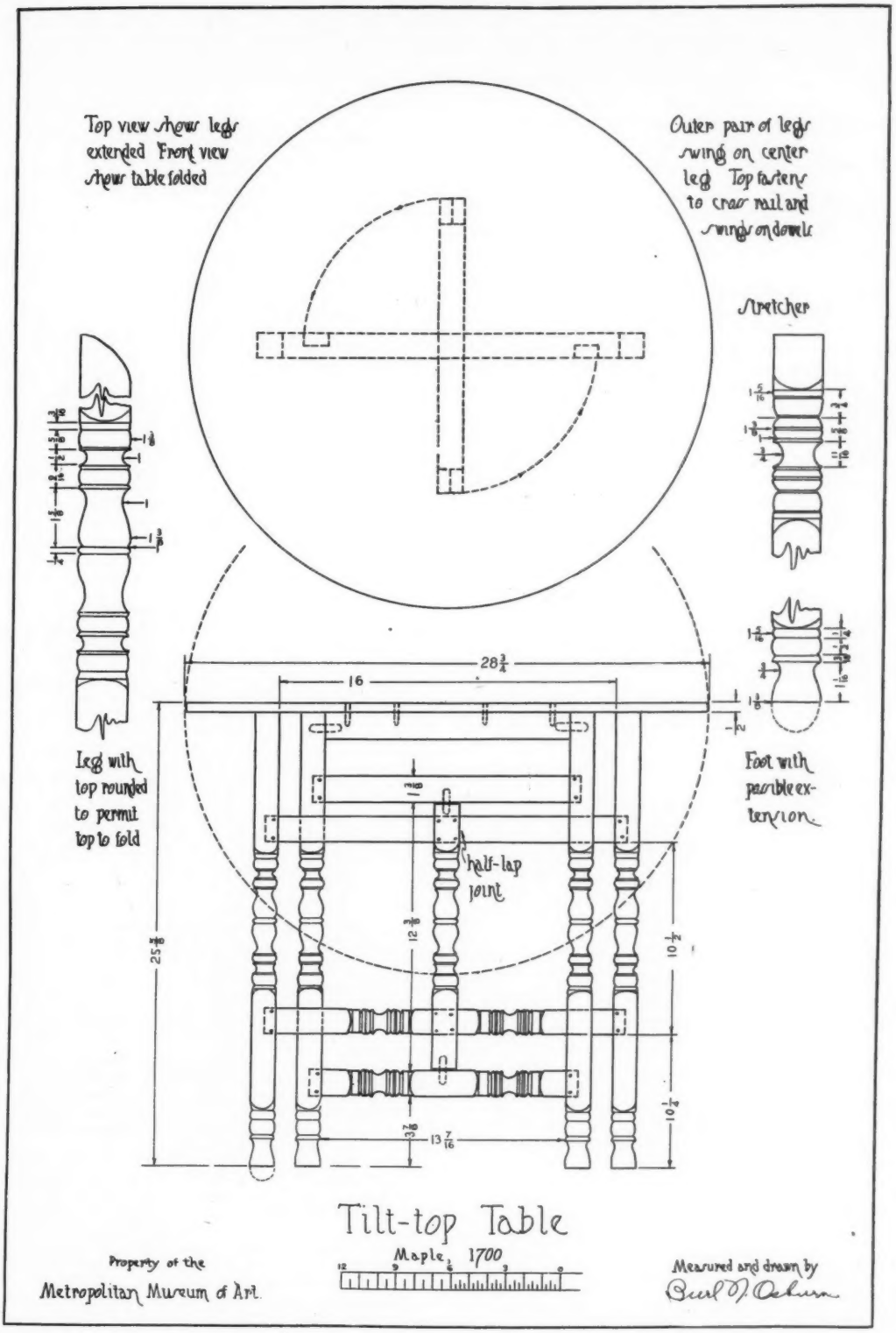
The instructor's part is simply to inspect the finished work, check the card if satisfactory, then assign the next job. The time record feature of the card is of valuable help to the instructor in determining when to advance the student to the next unit of subject matter in the course of study outline.

TILT-TOP TABLE.

TILT-TOP TABLE

Burl N. Osburn

This little table is one of the pieces of seventeenth century furniture that is very practical today. The top may be tilted to a vertical position when the legs are folded together. The outer pair of legs is fastened by two cross stretchers to the center leg which turns on dowels inserted in the two solid stretchers connecting the inner pair of legs. The top is fastened by dowels put through the top to a cross bar fitting between the inner pair of legs and turning on dowels inserted in them. The tops


Top view shows legs extended Front view shows table folded
Outer pair of legs swing on center leg Top fastens to cross rail and swings on dowels
Stretcher
Leg with top rounded to permit top to fold
Foot with possible extension
28 3/4
16
25 5/8
12 3/8
10 1/2
half-lap joint
Tilt-top Table
Maple 1700
Property of the Metropolitan Museum of Art.
Measured and drawn by

of all four legs are rounded so that when the legs are folded together, by means of the notches, all bevels will slant in the same direction. All tenons and half-lap joints are pinned. The feet of the table were probably cut off at some later period to allow for casters, and may be extended in reproductions if desired. The table is constructed of maple and is now a dark brown color.

Stock Bill—Mill sizes

No.	Name	Thickness	Width	Length
1	top	7/8	29	29
4	legs	1 7/8	1 7/8	27
1	center leg	1 7/8	1 7/8	13
2	cross-rails	1 7/8	1 7/8	19
2	cross-rails	1 7/8	1 7/8	16
1	top rail	1 7/8	7 7/8	14

Association and Convention News

Reports of Important Gatherings East and West

CONFERENCE ON TRAINING OF MANUAL ARTS TEACHERS

By Prof. A. B. Mays, University of Illinois.

The fourteenth annual conference of men representing institutions engaged in the preparation of teachers of manual arts and industrial education in the Mississippi Valley States was held at the University of Illinois on Thursday, Friday and Saturday, November 15, 16 and 17th. This was one of the most largely attended meetings since the organization of the conference, there being 37 representatives from twelve states.

A program of unusual interest was presented. Dean C. E. Chadsey of the College of Education of the University of Illinois opened the conference with an address in which he expressed his confidence in the rapid progress of industrial education as it is now organized, and he struck a responsive chord when he urged the closest possible cooperation of the industrial education forces with the great general educational movements.

Among the reports which attracted the largest attention was that of Prof. Selvidge of the University of Missouri on The Character of Curricula for the Training of Teachers. He laid down as important weaknesses in present programs the following propositions:

1. The program for the training of teachers is too diversified.
2. The common elements are often lost sight of.
3. Many of the factors upon which we base our judgment of the success of teachers have no place in our training program:
4. In our admission requirements we make no provision for excluding those candidates for entrance who do not possess the necessary factors of success, in which we give no training:
5. We should give direct and specific training in those factors by which success is measured.
6. The following classification of factors taken from a list prepared by the University of Chicago, is quite generally used in rating and might well form the basis of training.

I. Personal Equipment

1. General appearance.
2. Voice.
3. Natural aptitude for teaching.
4. Accuracy.
5. Industry.
6. Enthusiasm and optimism.
7. Integrity and sincerity.
8. Promptness.

II. Social and Professional Equipment

1. Courtesy to associates, pupils and patrons.
2. Understanding of children.
3. Ability to meet and interest patrons.
4. Interest in lives of pupils.
5. Cooperation and loyalty.
6. Professional interests and growth.
7. Daily preparation.
8. Use of English.
9. Accuracy of knowledge.
10. Breadth of scholarship.

III. Administrative Technique

1. Care of light, heat and ventilation.
2. Neatness of room.
3. Care of routine.
4. Discipline and governing skill.
5. Initiative and resourcefulness.
6. Adaptability and self reliance.
7. Self control.
8. Tact.
9. Sense of justice.
10. Economy.

IV. Teaching Technique

1. Definiteness and clearness of aim.
2. Skill in habit formation.
3. Skill in stimulating thought.
4. Skill in teaching how to study.
5. Skill in questioning.
6. Choice of subject matter.
7. Organization of subject matter.
8. Care in the assignment of lesson.
9. Skill in motivating work.
10. Attention to individual needs.

V. Results

1. Attention and response of class.
2. Growth of pupils in subject matter.
3. General development of pupils.
4. General influence.

Under the chairmanship of Mr. James McKinney of the American School, a spirited round table discussion on Training Teachers in Service aroused much interest. Other numbers of outstanding interest were the reports on standardized tests by Professor Griffith of the University of Wisconsin and Professor Whitcome of Miami University. Professor Griffith gave the results of several years' research in developing a test which has been standardized for two large city school systems, and Professor Whitcome presented a different type of test which has been in use at Miami for several years. The latter report offered as factors to be included in the rating of a project the following:

a. Adequacy with which the idea in the mind of the worker is expressed.

b. Quality of workmanship—skill in execution.

c. Extent to which the elements of beauty are incorporated in the project.

d. Completeness of accompanying helps to construction and understanding such as, working drawing or design appropriate to the specific craft or trade to which the project belongs, bill of material and cost, notes necessary to an intelligent construction of the project, a statement of the time taken for the complete development of the project, other essential data, etc.

e. Economy in time taken for the complete development of the project.

Two other reports which excited much interest were those by Mr. Robert Woellner of the University High School of the University of Chicago and the preliminary report on Industrial Arts in Junior High Schools by Mr. Roberts of Cleveland which is soon to be printed in final form and distributed by the U. S. Bureau of Education. This report will doubtless constitute one of the most valuable contributions yet made to the junior high school movement in so far as the industrial arts are concerned. Mr. Woellner gave as the general scheme of the University of Chicago experiment the following:

Need for a two-fold manual arts curriculum.

a. The general student.

The large majority of the students go on to college. Immediate vocational training therefore is not of primary consideration. What a manual arts course might contribute to the educational program of the general student is of most immediate concern.

b. The pre-engineering student.

Because of interest, a desire to enter an engineering college, or a parent's wish, a certain number of students desire courses in advance of those manual arts courses designed for the general student.

Nature of manual arts courses for the general student.

a. What the well-informed, intelligent member of present day society knows or should know about the manual arts activities of every day life, forms the substance for course construction for the general student. (After Bobbitt's Objectives and Basic Assumptions.)

b. Just what these manual arts activities are might be indicated and grouped as follows: (Bennett's "The Manual Arts," Page 16)

(1) The graphic arts.
(2) The mechanic arts.
(3) The plastic arts.
(4) The textile arts.
(5) The book-making arts.

Organization of courses upon the basis of the relative importance of these activities.

a. Select the major fields of importance from entire group of manual arts activities.
b. Determine within each of the fields chosen, the items essential in the training of the general student.
c. Group these into "blocks" for instructional purposes.
d. Select problems that are best suited for most effectively aiding the student to master the principles underlying each "block" of instruction.
e. List questions, the answers of which will give the instructor conclusive evidences that pupil has properly interpreted the problem or problems completed.

Teaching technique (As applied to course in drawing).

a. Each student is equipped with a book of blueprints which indicate all the problems of the entire course. He is also given a number of mimeographed sheets containing general instructions; questions to be answered and turned in with each completed drawing; a list of classified references which he might consult before working at any one of the units of work.
b. Both the drawing and answers to questions must be approved before credit for the "block" is given.
c. By this process instruction is entirely individualized.
d. Credit is given on the basis of "blocks" of instruction understood rather than upon time spent.

The report on Progress in the Development of Plans for the Training of Teachers by Professor A. B. Mays of the University of Illinois and Professor Homer J. Smith of the University of Minnesota provoked much lively discussion and showed a most gratifying growth in the work of the Industrial Education Departments in the State Universities.

Dr. William T. Bawden, Associate superintendent of schools, Tulsa, Oklahoma, was requested to continue as chairman of the conference and to arrange for a meeting next year at Purdue University.

FEDERAL BOARD CALLS CONFERENCE ON BUILDING TRADES APPRENTICESHIP

E. L. Bowman, Educational Director, National Trade Extension Bureau of the Plumbing and Heating Industries

The shortage of building mechanics has become so alarming, and existing training methods seem so inadequate to cope with the task of producing sufficient workmen that the Federal Board for Vocational Education called a conference at Washington on November fifteenth to lay out a program for a nation-wide campaign for more apprentices and better training. This meeting was attended by representatives of twenty organizations directly interested, such as the Associated General Contractors, the American Construction Council, the American Institute of Architects, employer associations in tilesetting, plumbing and steamfitting, painting, slate roofing and plastering, and builders' organizations in New York Philadelphia, Cleveland and Rochester.

Alarming Shortages Disclosed

The discussions disclosed that there were available only 77% of the men actually needed in the building trades. Alarming shortages were reported in the following trades, in per cent of workers needed: lathers, 57; plasterers, 54; painters, 47; bricklayers, 39; steamfitters, 33; plumbers, 28; and carpenters, 25. The consuming public pays the bills for these deficiencies, since the increased cost to owners is passed on in the form of rent or higher prices.

When such a great discrepancy between supply and demand occurs, one of two things happens: where consumers are unwilling to pay the high prices, the demand collapses, just as plans for more than fifty millions of proposed construction were withdrawn in New York last spring; or there comes in from other trades a horde of half-baked mechanics, attracted by high wages but incapable of producing as much or as good work as competent craftsmen. In the one case, the housing shortage is increased, and the day of reckoning merely postponed; in the other, competent mechanics lose reputation because of the shortcomings of the poorly trained interlopers.

A major cause of the lack of apprentices in the building trades was alleged to be neglect to provide for instruction of the learners. In former years, before wages became so high, the journeymen could take time to teach the apprentice what the boy could not pick up about the trade. Today the pressure for production is so strong that the journeyman has no time for instruction. The rule for the treatment of apprentices has too often been, "Catch 'em young, treat 'em rough, and tell 'em nothing!" As a result the skilled trades today are recruiting barely enough to keep ahead of the Grim Reaper. There is no growth to take care of the steady increase in population.

No Lack of Boys

Where suitable training is offered, there is no lack of the better type of boys desiring to learn a skilled trade. Apprentice training should be controlled by a committee representing employers, employees, public schools, and related interests like architects, real estate dealers, manufacturers of building materials, etc. Such a commission would stabilize apprenticeship conditions and guarantee to the learners opportunities commensurate with their sacrifice in time and lowered wages while learning. Where the number of apprentices is large, it is probable that the committee would employ a commissioner as their executive officer.

To carry out the guarantees of training, and to meet the objections of employers who allege that apprentices are a liability rather than an asset the first six months, pre-employment training of boys under contract of employment was urged. It has been demonstrated in tilesetting that three months of this training makes the apprentice an asset from the beginning; and the national union has recognized this fact by giving six months' credit on apprenticeship to those completing such a course. The pre-employment training should be followed by part-time training, concentrated in dull seasons in trades where these occur, and spread over the entire year in other trades.

Preparing Text Material

The first task to be attacked is the analysis of trades and the framing of standardized instructional material. Much of the teacher-training problem will be eliminated when such material is placed in the hands of the instructors. This has been done in tilesetting and painting, and is being worked out in the plumbing industry. The committee on Apprenticeship of the American Construction council will undertake the framing of texts in other trades.

Summary of Recommendations

The more important recommendations of the conference follow:

1. Local committees, representing all interests in the building industry, are essential to determine the need for apprenticeship and to supervise the required training.
2. National trade associations should be responsible for setting up and broadcasting training standards for apprenticeship.
3. Cooperation with the public schools is essential in vocational guidance, testing of physical and mental fitness of candidates, and the giving of training.
4. Adequate incentives to apprenticeship should be provided, in the form of guarantees of continuous employment, opportunity to master the whole trade, chance to secure technical training, and elimination of intermittent employment throughout the industry.
5. Pre-employment training, followed by part-time instruction to supplement experience on the job, should be provided.
6. Training for the whole trade is needed more than training for a specialty.
7. It should be recognized that there is a wide difference between training for shop trades and training for the building trades.

Mr. Harry Shepard of Vincennes, Ind., has taken the place of Mr. Grover Pratt in the department of architecture, of the St. Paul, Minn., vocational school.

Mr. S. E. Doody is instructor in welding, and **Mr. K. P. Merts** in electricity, in the St. Paul Vocational School.

Mr. C. B. Niquette, of the Oshkosh Vocational School, has been engaged to teach manual training at the St. Paul, Minn., vocational school. **Mr. W. A. Devo** and **Mr. Martin Swanlund**, are also recent additions to the grade manual training staff.

NOVEMBER MEETING OF THE SCHOOL CRAFTS CLUB

The School Crafts Club of New York City, with a membership made up of directors and teachers of industrial subjects from the Metropolitan district, met on Saturday evening, November 17, in a grill room of La Maisonette on West 45th St. The session was conducted by Mr. Philip M. Wagner of Newark, N. J., who has so ably filled the office of president for the past year.

The program had many interesting features, including the installation of officers for the coming year. They are as follows:

President, Mr. Edwin F. Judd, Montclair, N. J.

Vice-President, Mr. Frederick C. Arnold of the Bronx, New York City.

Treasurer, Mr. Charles H. Kennington, Newark, N. J.

Financial Secretary, Mr. Russell F. Hemion, Paterson, N. J.

Secretary, Mr. Thomas Darling, 2333 Creston Ave., The Bronx, New York City.

The committees for the new year follow: Program, Mr. Robert A. Campbell, Mr. William B. Courtney, and Mr. Frank A. Baker; Membership, Mr. George Dobbelaar, Mr. Samuel Tanenbaum, and Mr. Otto Schantz; Publicity, Mr. Lloyd F. Stair, Mr. Albert Petterson, and Mr. Richard O. Reger.

Miss Bonnie E. Snow, Millburn, N. J., editor of "Everyday Art" and director of Snow-Froelich School of Industrial Arts, Chicago, Illinois, spoke upon the topic, "The Good and Bad in Industrial Art." Mr. Wagner in introducing Miss Snow, said that to his knowledge she was the first woman to speak before the School Crafts Club. Miss Snow had a unique collection of porcelain, fabrics and utilitarian objects for illustrative purposes. She said in part, that the men would not care to listen to what she had to say if they had not had their hunger satisfied by the dinner preceding her talk. Suppose the men had had no dinner, then there had been no means of satisfying their hunger for another day. Then their longing for food would have become acute. There are other forms of hunger than that for food. There is the longing for companionship, with the accompanying desire to satisfy. There is the hunger for familiar environment, homesickness. This longing became acute during the war among the soldiers. Then we have the hunger for beauty. Some tribes tattoe their arms and wear rings in their noses, just to satisfy their conception of beauty, while modern men and women decorate their bodies with fine clothes. The trouble lies in the fact that there is no agreement as to what constitutes beauty, that the standards of beauty vary so. What can be done to unify these standards? We can teach the young those fundamentals which constitute beauty.

Miss Snow compared a landscape scene rendered in oil with an attempt to portray a landscape upon a dinner plate. In the first case we have a complete portrayal of a beautiful scene, in a fine frame. Here we have an object of great beauty. When we put the scene on a plate we transgress a certain law. No thought has been given to the construction of the object. Scenes from nature should be flattened out and conventionalized when used upon objects of use. Miss Snow had a large piece of cretonne, covered with large red roses and green leaves. The roses were in true form and lifelike. What have roses to do with a piece of cloth? Roses are beautiful in nature but it is using them with indignity to use them on sofas, curtains, hangings and rugs. Imagine a dutiful son, after saving his pennies, bringing home his rotund mother a present, a large apron covered with bright roses. For these purposes a design which suggests roses is more appropriate. Go to nature for suggestion, but flatten out and conventionalize the design. The colors even, need not be true, as long as we have harmony. We can achieve a great influence in our homes by cultivating good tastes on the part of the young.

The best designs in cretonne are imported. American designs are not conventional because we are accustomed to the true forms. The great stores in our cities are filled with monstrosities in design. These stores must supply what is demanded. When the nation is educated to what good design is then with a demand created our stores will carry better goods.

Miss Snow had examples, good and bad, in the decoration of towels, porcelain serving trays, bread boards, toys, candle-sticks, and cut-glass work. She had a bread board with beautifully colored birds feeding worms to their young. Imagine cutting your bread on that! With these articles she wanted to illustrate that the thing itself should predominate, not the design. She displayed a sewing stand, excellently finished in mahogany, as an example of good line design, finish, and proportion.

Mr. Ned H. Dearborn, supervisor of practice and director of summer sessions, State Normal and Training School, Oswego, N. Y., treated the subject, Culture and Vocational Education. Mr. H. H. Horne gives the aims of education as health, goodness, beauty, truth, vocation, and religion. Recent authorities all include vocational education. Culture and vocational education must be interdependent. Mr. Dearborn quoted the following:

"By vocation we live, by culture we live abundantly.
Vocation has immediate, culture has remote ends.
Vocation is a limiting occupation, culture is an unlimited outlook.
Vocation looks without, culture looks within.
Vocation is work, culture is play (not idleness).
Vocation is the bondage of necessity, culture is the yoke of freedom.
Vocation binds one to the here and now, culture connects one with the there and then.
Vocation is pragmatic, culture is idealistic.
Vocation is narrow utility, culture is broad utility.
Vocation is primitive, oriental, Roman, culture is Hellenic and Rennaissance.
Vocation is Dionysis, culture is Appolo.
Vocation is a son of Martha, culture a son of Mary.
Vocation is the naturalism of Rosseau, culture is the humanism of Fichte.
Vocation is man toiling, culture is man thinking and creating.
Vocation bakes bread, culture makes it worth while that bread should be baked.
Culture gives value to vocation, vocation makes culture possible.
Ruskin: 'Life without industry is guilt, and industry without art is brutality.'
Culture without vocation is like Nero fiddling while Rome burns, while vocation without culture is like the peasants laboring when there is no angelus to ring.
The cultured man without a vocation is a social parasite, while the natural man without culture is a slave to his own nature."

The ultimate aim of vocational education should be men, not just workmen. Pound, in the Iron Man, says we are moving toward a shorter working day, with more time for association with people. This calls for an appreciation of a broad nature. Mankind requires a vocational education that is cultural at the bottom, and a cultural education that is vocational at the top.

These new members were voted into the club: Mr. Fred O. Armstrong, Orange, N. J.; Mr. A. W. Anderson, Orange, N. J.; Mr. Henry Cohen, New York City; and Mr. Wilbur A. Demarest, Elizabeth, N. J. Mr. George Dobbelaar, 173 Central Ave., Leonia, N. J., who is chairman of the membership committee, would be pleased to get in touch with any men who would like to obtain the advantages of a membership in the School Crafts Club.

—Lloyd F. Stair.

INDUSTRIAL EDUCATIONAL DIVISION OF OKLAHOMA

On November 8th, 9th, and 10th the manual arts teachers of Oklahoma met for a three days' conference at Edmond. Dr. A. D. Dean of the Teachers College, New York was the main speaker. In part, Dr Dean said that a teacher should turn in his course of study every two years, the students should feel free when the instructor is giving a demonstration, the teacher should organize his own mind, and by all means change the models at least every 28 years. "Oklahoma is receiving great advertising by obtaining Dr. P. P. Claxton, and Dr. Wm. T. Bawden, (and otherwise);" he said, "I have never made fun of the manual training man, but I have taken shots, and expect to continue to poke fun at the coat hanger and sleeve board. The shop man should be proud that he is a thinker and a doer. As long as a shop teacher stays in the corner he will never be a leader; he must attend the faculty meetings, teachers' meetings, conferences, etc. We need men that can think through problems. The junior high school can bring about interest that will finally bring the boys and girls to vocational schools. About all the teacher can do is to give technique; a teacher must have a vision, otherwise, he is only a regular person." In speaking of

printing he said that printing brings in art and English. It appeals to the public. Printing should not be taught for production only.

This is the second time that Dr. Dean has been to Oklahoma this year. Each trip he has left something for the school men to think about.

Mr. Quigley, regional supervisor of vocational education in the southern states, left two real messages with those present. He outlined the state supervisor's work in saying that his purpose was to develop cooperation with the local school program. The main courses are: research, teacher-training, promotion, and inspection. The object of education is to make a better citizen out of the student. Leadership for vocational education has come from the manual training departments. (This statement made the chests of those present heave with pride.)

After hearing Dr. Bawden we could realize why Oklahoma was receiving such favorable advertising. Dr. Bawden in part said, "We owe it to ourselves to take an interest in vocational education which is sure to come soon If a young man wishes to get ahead he should study the problems of vocational education, gaining knowledge from others that have gotten ahead. Write something, work with others, go to places, work overtime, etc. Failures are due to being confined to the work bench, and not to the things that we are doing; also, to the lack of informational values. We should lead the student to do more thinking along the line of work that he is doing. We should pay more attention to group, or class instruction."

Charles W. Briles, state supervisor of vocational education, threw stress on part time and evening school programs that are going on over the state. He said that there was no question but that shop work will continue to grow.

At a previous meeting this body of men drew up and submitted a plan of certification for the teachers in the shop work which was adopted by the Oklahoma state board of education. At this meeting, Nov. 8, 9 and 10, 1923, there were adopted a number of courses such as one for mechanical drawing; also, a text for the same; a course in wood work for the junior high school on the first two years in High School proper. Among other courses that are to be written in the course of study for high school another year will be printing and metal working courses.

The following officers were elected for the ensuing year:

De Witt Hunt, superintendent of shops, A. & M. College, Stillwater, president.

Harry W. McKimmey, head cabinet shop, Oklahoma City high school, vice-president.

Hugh Morris, director of vocational education, Teachers' College. Ada, secretary-treasurer.

M. C. Courtney, director manual arts, Chickasha high school, executive council, 1925.

—Hugh Morris.

THE MEETING OF THE MANUAL ARTS AND INDUSTRIAL EDUCATION SECTION OF THE M. S. T. A. IN DETROIT

The Manual Arts and Industrial Education section of the M. S. T. A. met on Thursday, October 25, 1923, in the Cass High School at Detroit, Michigan. Over one hundred teachers were present who listened to a most interesting and instructive program.

Mr. K. G. Smith, head of vocational education in Michigan, gave the principal address. His topic was "Outstanding Events of 1922-23." He stated that great progress had been made in the past year in vocational education, and made as his strong point that there must be a closer relation between the school and the job, and that there should be a follow-up system after the student leaves school. The second speaker was Mr. S. E. Searles, head of the Ford Trade School, who explained fully their system of educating a boy to be a machinist or draftsman. This school keeps the boy one week in the schoolroom and two weeks in the shop on actual machine work on Ford parts. Mr. Searles stated that a boy is just as accurate as a man, and can do just as close work. These boys stay four years to graduate, and are then given good positions in the Ford Motor Co.

Mr. R. D. Gould spoke of his work in the general shop in the Southeastern high school, Detroit. where he gives five different activities at once: machine shop, machine design, sheet metal, pattern making, and moulding. He has five groups of four boys each, and rotates the groups.

Mr. J. H. Trybom, director of manual arts in Detroit, gave an interesting discussion on the necessity of a general shop in the academic high school. He presented to prove his point the results of a questionnaire made out by 202 persons who are now in all walks of life, from doctors to salesmen. A large per cent stated definitely that they had had use for mechanical knowledge now given in a so-called general shop course in the high school.

The program was concluded by Mr. F. R. Kepler, who described how "Mechanical Drawing Lettering Tests" are given in Detroit. He stated definitely that the lettering had shown an improvement since the tests were started two years ago.

Mr. Carl Dorsey of Highland Park, Michigan, was elected Chairman for the ensuing year. R. E. Sprague.

CENTRAL MICHIGAN MEETING.

The Manual Arts and Industrial Education Section of the Michigan State Teachers' Association held its annual session at Kalamazoo, on Oct. 29th. The first part of the program consisted of a general meeting of all those interested in manual and industrial arts.

Mr. Frank H. McCrea, chairman of the section, outlined the plan under which the meetings were to be held and gave reasons therefor. He said that for the past few years there had been considerable dissatisfaction over the meetings due primarily to the fact that there were so many types of interest represented that it was difficult in a single program to give everyone anything that would be particularly helpful in solving his own problems. Hence, it was decided to break the conference up into subsections or round-table conferences, each with a presiding officer and a program of its own, in the hope that this particular difficulty might be overcome. There were three of these conferences under the following headings: (1) Part Time Work; (2) Trade Work; (3) Manual Arts.

There were 108 people present at the preliminary meeting and probably 125 in all attended the conferences.

A number of excellent papers were read followed by spirited discussions. The feeling seemed to be quite general that these meetings were the most satisfactory that had ever been held in this district. It was voted to continue the meetings for another year upon the same plan.

Mr. George B. Frazee, principal of the Vocational School of Grand Rapids was elected general chairman for next year.—Jos. D. Bicknell.

ILLINOIS MANUAL ARTS ASSOCIATION CONVENTION

Held at Bloomington, Illinois, Oct. 20, 1923

The twentieth annual convention of the Illinois Manual Arts Association was held October 20, 1923, at Bloomington High School. The convention opened with a musical program furnished by Bloomington talent. Superintendent S. K. McDowell of the Bloomington schools delivered the address of welcome. Following his introductory remarks, he traced briefly the industrial influence from the middle of the fifteenth century to the present time. He pointed out that one of the benfits of a coarse in manual arts is that it aids the pupil in understanding the activities that are taking place in the world about him.

A. B. McCall, president of the association gave a short talk in which he emphasized the necessity of the manual arts teacher broadening his influence by taking a more active part in civic affairs.

Charles A. Bennett, editor of the Industrial Education Magazine discussed the topic "The Trend of the Times in Manual Arts." He traced briefly the development of the manual arts from its beginning to the present time. He noted the fact that manual arts is now on the same plane with other subjects and that this has been brought about largely through the influence of the manual training high schools. He stated that we are now living in an age of mechanical activities and that the more we understand concerning the activties going on about us the better off we are. Therefore, one of the purposes of manual arts instruction should be to enable the pupil to appreciate and understand the industrial activities going on about him. He pointed out that creative work has been emphasized too strongly in some schools and that the imitative method of instruction should not be abandoned altogether. He noted the fact that there is a tendency at present in some schools for one teacher to try to teach several different kinds of work in one shop, which, in most cases, is not a successful plan. He stated that we are, however, to be compelled to offer different kinds of work. Another tendency at present, he said, is

to enrich the courses in manual arts. They are too meager in content. In enriching, however, we should not overlook the importance of habit formation.

"Application of Standard Tests and Measurements in the Manual Arts" was discussed by A. G. Bauersfeld, supervisor of technical work in Chicago high schools. Mr. Bauersfield gave some interesting information regarding the tests which are being given this year in the Chicago high schools. He stated that the tests had not yet been given to a sufficient number of pupils to justify conclusions but that they had been carried far enough to indicate that much information will be obtained which will be of considerable assistance in classifying pupils.

The afternoon program consisted of a group of short talks by teachers who have been especially successful in some particular phase of manual-arts work. The first of these talks was given by H. J. McEuen of Austin high school, Chicago, on "The Textbook on Asset in Manual Arts." He emphasized the fact that the textbook is needed as a source from which to obtain related information and to get directions for doing work.

E. E. Ericson of Peoria discussed the topic "Advertising the Local Program in Industrial Arts." He pointed out the danger of over-advertising but stated that, too frequently, the local program was under-advertised. Some methods of advertising suggested were: (a) through newspapers, if done in a diplomatic way; (b) by exhibits; (c) through the organization of clubs; (d) contests, as kite flying, bird house building, etc.; (e) by civic work of various types; (f) open nights to which patrons are invited to come and visit classes in session. He emphasized the necessity of every supervisor carrying on a definite program of advertising.

"Class Work in Making Electrical Apparatus" was discussed by C. J. Herringshaw of Lane technical high school, Chicago. He stated that the fundamental reason for putting electrical work in Lane technical high school was to keep the boys in school. The work as described by Mr. Herringshaw covers three years and is divided as follows: 1st year, elementary projects; 2nd year, house wiring; 3rd year, advanced projects.

In the topic "Modernizing Shop Work," by G. C. Humphrey of Granite City, the necessity of keeping shop projects up-to-date was emphasized. It was suggested that in furniture making period styles should be used whenever possible.

"Auto-mechanics Class Work in Austin High School" was discussed by George W. Dodge of the Austin high school, Chicago. He described the auto-mechanics work in Austin high school, which work is divided into four departments as follows: (a) electrical, (b) vulcanizing, (c) battery work, (d) repairing. Two classes of students known as the two-year boys and the technical boys take the work. The first month's work consists of theory only. Much shop sketching and discussion of topics pertaining to the automobile are done. The boys are divided into groups of fours with one boy in each group as captain. All work is brought to the shop and consists principally of work on Ford cars. The boys become very dependable and about ten per cent of them become very efficient.

In the topic "Development of Self-reliance in Students," Edgar Schultz of the Converse School, Springfield, stressed the following points: (a) Absolute self-confidence on the part of the instructor. He should show to the class that he knows what he is going to do. (b) Obtaining the confidence of the pupil by letting him know that you are trusting him. Allow him to feel perfectly free in the classroom. (c) Give the pupil some responsibility. In shop work this may be done by allowing him to check tools, check the attendance, and to make out his own records.

The following officers were elected for next year: President, C. H. Dalton, Lovington; vice-president, E. E. Ericson, Peoria; secretary-treasurer, Wayne Wetzel, Macomb.

The question of where the next convention will be held was left to the decision of the officers. Invitations were extended by Austin high school, Chicago, and Millikin University, Decatur.

A vote of thanks was extended to the retiring officers for their work in behalf of the Association, which has increased its membership one hundred per cent during the past year. The retiring officers are: President, A. B. McCall, Springfield; vice-president, M. F. Kavanaugh, Springfield; secretary-treasurer, Linder S. Wood, Bloomington.

BOSTON VOCATIONAL EDUCATION SOCIETY MEETS

Schools and industrial concerns are at the present time engaged in working out scientific methods of measuring the mental traits and the general capacities of human beings. The big general aim of such work in the schools is the improvement of teaching and the better shaping of the school program to the needs of its pupils. Industry aims to make itself more efficient in placing the worker in that field of effort where his personality and abilities will be of most advantage to all concerned.

At the first meeting of the year Mr. Johnson O'Connor spoke to the Vocational Education Society of Boston on the subject "Mental and Physical Tests in Industry to Better Place Workers on Their Jobs."

Mr. O'Connor is developing this type of work at the Lynn plants of the General Electric Company. He demonstrated the procedure of several tests using as subjects Mr. M. N. Stratton, president of the society, Professor John Brewer of Harvard University and Mr. John

M. NORCROSS STRATTON,
President of the Boston Vocational Education Society.

Brodhead, Assistant Superintendent of Schools in Boston. Although each of these men passed with credit to himself and to the society we have yet to hear of their services being drafted by the General Electric Company. The writer refuses the role of prophet in this connection.

The speaker said that there are four classifications of persons who take his tests at Lynn.

1. All new employees must take the tests prior to employment.
2. Employees who are failing in a given job may take the tests and be assigned to other work which the results of the tests would indicate might be more nearly within the individual aptitude.
3. Any employee must take the tests for promotion and transfer possibilities.
4. Any employee may take the test.

Before working out the test Mr. O'Connor analyzes the job for the mental and physical traits required for the proper performance of the job. The test is then organized to discover the traits in the individual and is "checked" by examining men already successfully working on the job. If the results of such testing are favorable the test is considered adequate and is adopted. The speaker assured his audience that actual use of such tests in industry has substantiated his faith in the tests as a medium by which to better select the job for the worker. He showed tests for traits required by mechanics, inspectors and clerks.

A committee was appointed to investigate and report to the Society on the subject of tests and measurements for the vocational schools.

At this meeting, the first of the year, 32 names were added to the membership roll by action of the society. The officers who had served so well last year were elected to serve again this year as follows:

M. Norcross Stratton.....President
Frederick H. Sawyer.....Vice-President
W. E. O'Connor.....Secretary
Richard Benson.....Treasurer
Martin L. Olson.....Librarian

Last year, the twenty-fifth anniversary of the Society, was a banner one in the history of the society. The membership responded in a most loyal fashion to the leadership of the officers. The constitution and the by-laws were revised to meet conditions which have developed with the expansion of vocational education in this section.

The November meeting on Saturday the 10th was productive of professional interest and advantage. Mr. Harvey L. Gruver, superintendent of schools in Lynn, Mass., and president of the New England Association of School Superintendents, addressed the meeting on the subject, "The Place of Vocational Education in a Public School as Viewed by a Superintendent."

He spoke of Education as an inclusive term and pointed out that education should be an instrument for the largest development of the individual and an efficient aid to him in his contribution to society. Educators at large were counselled to keep in mind the fact that every phase in education is a phase only and while for sufficient reason emphasis may be placed upon a particular phase there is a certain common ground which any educated person must have covered. Mr. Gruver asked for an expression of opinion and the members favored an allotment of one half the school time for related and general instruction in the conventional subjects. Other points which the speaker made were:

As a nation we have undeniably made much progress in converting the forces and elements of nature to the uses of society.

It is a debatable question as to whether we have made equal progress in the development of good citizenship.

The length of the working day will ultimately be shortened from eight to six or four hours. Present day over-production or under consumption makes the change inevitable along with development in scientific methods of production.

There should be a uniform program up to a certain grade and age.

The major objective of every school must be measured in terms of life values.

School men must not think in terms of isolation.

We have passed the saturation point in regard to the "marginal subjects."

Vocational education is accepted as it can make good its claims. This is true of every "phase" of education.

The Society went on record as favoring the organization which makes the vocational schools a unit in the public school system.

Shop Projects Without Machinery

400. Q: Please suggest some high school projects suitable for a shop where there is no machinery. I am interested in cedar chests, oak furniture, etc., that will fume in simple period style.—A. W. DeV.

A: The following books will prove suggestive in selecting projects of the character desired: Rusch & Conway's Shopwork, $1.20, Industrial Book & Equipment Co., Indianapolis, Ind.; Yates's Shop Practice for Home Mechanics, $3, N. W. Henley Co., New York; Nye's Furniture Designing and Draughting, $2, Wm. T. Comstock Co., New York; Otter's Furniture for the Craftsman, $1.50, U. P. C. Book Co., New York; Griffith's Furniture Making, $1.25, Manual Arts Press, Peoria, Ill.; Selden's Elementary Cabinet Work, $1, Rand, McNally Co., New York, Chicago.

Refinishing Teachers' Desks.

402. Q: The Teachers' Flat Top Desks recently purchased for our school were finished in a dull finish. The finish was very thin and soon showed white spots and signs of wear. What is the cause and how can we overcome it? The Desks are Oak and finished light brown.—G. B. J.

A: I judge from your statement that the desks have been finished in shellac or a cheap rosin varnish, either of which is susceptible to white spotting. Since both of these are cheap quality goods, the only recourse is to entirely refinish the tops through the use of a varnish remover. If this is carefully done, there should be no need of restaining the tops. In view of the fact that varnish remover depends upon a paraffine blanket forming on top of the exposed film, for its efficiency, it is suggested that the varnish remover be applied with the minimum amount of brush work, using a long flowing stroke. Remover should be left undisturbed for about ten minutes or until it has softened the varnish so that a wide scraper knife will remove it thoroughly in one stroke. It is advisable to have quarter sheets of newspaper at hand upon which to wipe the removed varnish material. These wipings should be carefully collected and burnt, in order to avoid spontaneous combustion to which they are very susceptible. Following the complete removal of old varnish, the surface should be generously wiped with a cloth saturated with denatured alcohol, in order to remove all traces of greasiness. Stand aside at least twenty-four hours in a warm room. Apply a well brushed coat of high-grade floor varnish; allowing three to five days between coats, sanding the first and second with a split 0000 paper; and rubbing the third coat with felt pad, FF pumice stone and water. Clean up with a good polish.—R. G. W.

NATIONAL SOCIETY FOR VOCATIONAL EDUCATION HELD ITS 17th ANNUAL CONVENTION AT BUFFALO

The seventeenth annual convention of the National Society for Vocational Education was held at Buffalo, New York, December 6, 7 and 8. It was the largest convention ever held by the Society. "No convention could have received its program more cordially. A most wholesome attitude was shown in all sections. A real professional spirit was exhibited," stated Carl Colvin, state supervisor of agricultural education in Illinois and a vice-president of the society, at the close of the convention.

The program consisted of two general meetings, the usual banquet, and many sectional meetings devoted to agricutural, commercial education, homemaking education, industrial education, training in industry, continuation schools, training of teachers, and vocational rehabilitation. All of the general meetings, the banquet and the sectional meetings were held in the Hotel Statler.

A feature of the convention was the well organized visiting trips to schools and industrial plants, not only in Buffalo but also in other cities along the route taken by the delegates in coming to the convention. Booklets were sent out previous to the convention giving information about the many types of vocational education which could be seen en route to the convention.

Several parties were organized to visit particular things. Delegates were urged to spend the entire week in New York State in order to visit schools and industrial plants. L. A. Wilson, state director of vocational education, New York, acted as guide for a party of about fifty state directors and supervisors of vocational education and others interested.

This party started Monday morning, December 3rd, on a tour of inspection which included the Textile High School and the Manhattan Trade School of New York City. Dr. William Ettinger, superintendent of schools, New York City, and Burt Fenner, president of the apprenticeship commission, New York Building Congress, addressed the party, after luncheon in the Hotel Martinique.

In the afternoon, the Boys' Vocational School, Newark, New Jersey, was inspected. Murray Hill Evening School and the Evening School of Industrial Art, New York City, were seen in the evening.

Tuesday morning found this group at Rochester, where during the day the Boys' Prevocational school, Part-time school, and the Madison Junior High School of Rochester were visited. The party made a hasty ride to Buffalo arriving in time to see Elm Evening Vocational School and the Technical Evening High School of Buffalo. The following day, Wednesday, occurred the meetings of the National Association of State Directors of Vocational Education. At this meeting these topics were discussed:

Criticisms of vocational education and arguments to meet them, L. A. Wilson, New York, leader; How much financial support we expect industry to give to the vocational education program, R. O. Small, Massachusetts, leader; federal aid legislation for home making education, Wesley A. O'Leary, New Jersey, leader; and report of committee on co-operation with the management association, L. H. Dennis, chairman. A resolution was adopted endorsing the Fess amendment of the Smith-Hughes Law which would give more financial aid to home making work.

There was also a one-day session of the Apprenticeship Committee of the American Construction Council to discuss common training in industry problems. There were 45 representatives in attendance representing employers, employees, building material manufacturers, and educators. F. W. Walker, president, Associated Tile Manufacturers, was chairman of the meeting.

This was really a remarkable meeting for there were representatives of the employers, of the employees, and the allied interests. In order to secure future progress, three committees, or sub-committees, were appointed, as follows: Committee on finance, committee on instructional material, and one on survey.

In order to carry on the work of the big committee, financial means are essential. The finance committee was delegated to secure funds so that the committee on instructional material may collect existing courses of instruction in the various building trades being offered throughout the country and to suggest the types of courses that will meet the needs of the entire country.

It was also developed during the meeting of this committee that there is a decided need of a survey to find out the number of apprentices in the building crafts before any additional apprentices are indentured. This committee will report at a later date.

The convention proper began with sectional meetings on Thursday at 9 o'clock. Due to the many delegates who arrived that day, some sectional meetings did not start until somewhat later. The formal meeting of the convention was the annual banquet which was held on Thursday evening. This was followed with a dance. Officers of the Society stated that the Buffalo committee on entertainment of which William J. Regan, principal of the Central Continuation School, Buffalo, was chairman, deserves considerable credit for the splendid treatment accorded throughout the convention.

A wonderful spirit of cordiality permeated, not only the functions held during the convention, but also throughout the entire affair from the coming of the delegates to their return home. Buffalo people played host well to the visitors, according to officials of the society.

It is stated that there was a larger attendance at the banquet than was ever held at any previous convention of the society. Practically every state in the Union and a large representation from Canada responded when, during the banquet, Dr. Charles A. Prosser, president of the Society asked representatives of the states to stand as he called the names of the states.

In many respects, the most important meeting of the entire convention was the session held Thursday afternoon in the Industrial Section when the topic, training of workers for the building trades, was discussed.

G. A. McGarvey, federal agent, Federal Board of Vocational Education was the leader and introduced the various speakers. The speakers were men of experience and came from various fields, each discussing the topic from his own standpoint.

The topic was discussed as follows: the first speaker was Dwight L. Hoopingarner, executive secretary of the American Construction Council, New York City, speaking from the standpoint of the American Construction Council. John W. Cowper, of the John W. Cowper Company, general contractors, gave the viewpoint of the contractor. Louis Greenstein, president of the Buffalo Chapter American Institute of Architects presented the architectural side.

Thomas R. Preece, vice-president of the Bricklayers, Masons and Plasterers International Union of America, Indianapolis, gave the National Employees' Organization viewpoint. John O. Hanlon, New York State Federation of Labor represented the organized labor standpoint. F. W. Walker, president, Associated Tile Manufacturers, Beaver Falls, Pa., presented the viewpoint of the National Manufacturers' Association. Fred R. Moran, of the Education Committee, New York State Federation of Labor also spoke.

From these various discussions the following points seemed to stand out:

1. A representative committee composed of employers, employees, manufacturers, architects, engineers as well as educators was needed to determine the needs of apprentice education and supervise the training.
2. There is a necessity for giving training for an "all-round" mechanic.
3. There is a necessity for getting practical training on the job.
4. That the public schools are best adapted to give this supplementary training.

The speakers at the banquet were: L. W. Wallace, executive secretary, Federated American Engineering Societies, Washington; Francis G. Blair, state Superintendent of public instruction, Illinois; E. C. Hartwell, superintendent of schools, Buffalo.

The general meeting on Friday evening was as follows:

Adapting Home Economics to India's and New Zealand's Needs, Mrs. Ann Gilchrist Strong, Dean of the Department of Home Science, University of Otago, Dunedin, N. Z.

The Relation of the Schools to Industry, Mr. Thomas R. Preece, Indianapolis, Ind.

Industrial Rehabilitation and Its Problems, Dr. R. M. Little, State Department of Eudcation, Albany, N. Y.

The Effect of the Economic Readjustment on Agriculture and Industry, Dr. George F. Warren, Head of Department of Agricultural Economics, State College of Agriculture, Ithaca, N. Y.

At the general meeting on Saturday morning the following program was rendered:

Chairman—L. A. Wilson, State Department of Education, Albany, N. Y.,

How Can Labor and Education be Most Satisfactorily Combined, J. C. Wright, Director of the Federal Board for Vocational Education, Washington, D. C.

State Problems in Vocational Education, Hon. John W. Abercrombie State Superintendent of Education, Executive Officer of State Board for Vocational Education, Alabama.

Economic Value of Vocational Education, Hon. James J. Davis, Secretary of Labor, Chairman of the Federal Board for Vocational Education, Washington, D. C.

At the business meeting which followed the addresses, officers were elected:

President, L. H. Dennis, State Director of Vocational Education, Harrisburg, Pa.

Vice-Presidents—H. C. Givens, Little Rock, Ark.; Prof. F. G. Nichols, Cambridge, Mass.; F. E. Land, Atlanta, Ga.; Prof. H. E. Bradford, Lincoln, Neb.; Miss Jean Cox, Salt Lake, Utah; R. L. Cooley, Milwaukee, Wis.

Treasurer—John Clyde Oswald, New York, N. Y.

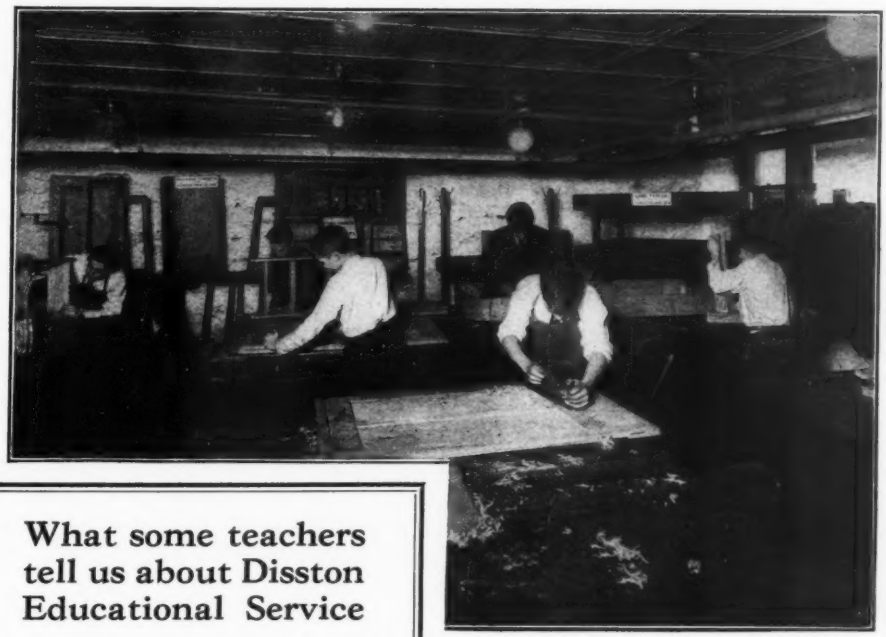
The convention resolved itself into six sections—Agricultural Education, Commercial Education, Home Economics, Industrial Education, Part-Time Schools and Vocational Rehabilitation. Space will not permit a discussion here of the programs or of the topics discussed. It was quite noticeable, however, the industrial education as such no longer monopolizes the attention of the convention, but that agricultural and part-time school work and vocational rehabilitation are becoming extremely important factors. The Commercial Education Department is perhaps the strongest, the best Standardized and the most certain in its proposal and methods. This fact is no doubt due to the long experience which commercial educators can bring to the convention.

The delegates after seeing one or two of the Vocational Schools requested seeing all of them, certainly the newest one—the McKinley Vocational School, No. 1500 Elmwood Avenue. All those who cared to go were transported by the transportation committee, Robert Hoole, Seneca Vocational School, Chairman, by automobiles furnished by school men for the occasion.

A smoker for the men was given Friday evening following the general meetings at the Hotel Statler.

The ladies of Buffalo furnished several entertainments to the visiting lady delegates. There was an open house at the Chapter House and tea served from 4 to 6 o'clock Thursday afternoon and Friday afternoon. Friday at 12:30 o'clock there was a Home Economics luncheon at the Lafayette Hotel, at which more than 200 delegates attended (Ladies). Miss Cora Winchell, Teachers College, Columbia University; Genevieve Fisher, Carnegie Institute (Margaret Morrison College), and Emma Conley, New York State Director, Home Economics were speakers. Miss Ethel Mason, Director Domestic Science of Buffalo was toastmistress.

Better Work



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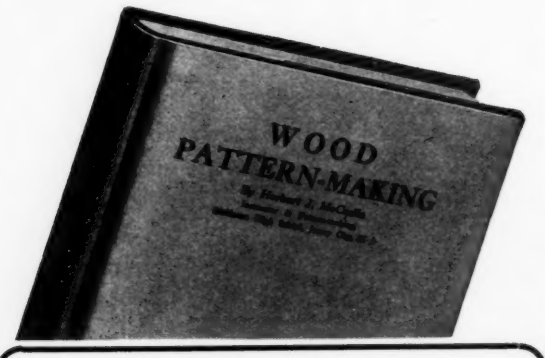

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THE INDUSTRIAL DIVISION OF MAINE TEACHERS MEETS

The Industrial Division of Maine Teachers is organized as a state of Maine society for vocational education. The program offered this year was one of the strongest ever carried out by the society. Mr. H. G. Noyes, of the Rumford Evening High School, Rumford, Me., acted as chairman of the meetings.

The first number on the program was a paper on Modern Methods in Manual Training, by Mr. F. P. Barker, supervisor of manual training at Brewer, Me. Mr. Barker offered many good projects for boys in industrial arts. He particularly emphasized projects for the seventh, eighth and ninth grades.

The second address was entitled Vocational Courses for a School System, and was handled by Mr. Arthur Hauler, supervisor of manual training at Bangor. Mr. Hauler showed how citizenship, character, academic subjects and vocational studies may be correlated in a course in vocational education.

The third speaker was Dr. John M. Brewer, who discussed the subject, The Relation Between General and Vocational Education. Dr. Brewer, who is vocational director at Harvard University, dweit at length on the definition of general and vocational education. By means of a diagram, he showed how the boy or girl can be led from general to full-time vocational training.

A round-table discussion on industrial education in Maine, was led by Mr. Harold L. Pride, state supervisor of trades and industries at Augusta. The discussion brought out the fact that most Maine teachers are getting away from the old methods of wood working and are introducing simple projects in concrete work, electrical wiring, automobile repair, printing, etc. The problem of carrying one, two or more projects in one class at the same time brought forth a lively discussion.

At this time the annual business meeting took place. The following officers were elected for the ensuing year:

President, Stephen E. Patrick, Westbrook; Vice-President, Ernest Curley, Lewiston; Secretary-Treasurer, Harold L. Pride, Augusta; Field secretaries, Herbert S. Hill, Orono, and Harriet S. Sweetsir, Augusta.

Executive Committee: Agriculture, G. C. Coffee, East Corinth; Social Service, M. S. Hill, Bangor; Home Economics, Florence Jenkins, Portland; Trades and Industries, C. P. Harrington, Dexter; Related Subjects, L. W. Mackay, Sanford; Manual Training, Arthur Hauler, Bangor; Shop Practice, John F. Parker, Portland; Correspondence Schools, W. G. Venn, Portland. The officers and the state director of vocational education, Mr. E. K. Jenkins, are ex-officio members of the executive committee.

Supt. A. B. Garcelon, of Bangor, extended an invitation to the society to meet in that city for the forthcoming spring conference. The invitation was unanimously accepted and the meeting will be held in May. The New Hampshire industrial teachers have been invited to join the Maine teachers at the spring meeting.—**Harold G. Noyes.**

MANUAL ARTS TEACHERS OF KANSAS MEET

The Salina section of the Kansas Teachers' Association held a small, but interesting round-table meeting. The general discussions were much in detail and were participated in by practically every man present. Mr. G. C. Archer acted as chairman of the program.

The first subject on the program was Furniture Weaving Projects, which was handled by Mr. R. D. Brooks of Great Bend, and Mr. S. W. Ettinger, of Abilene.

The topic Is Manual Arts Successfully Taught in the Average High School? was discussed in open meeting and brought out many of the weak spots in the courses, as well as the qualifications of teachers in the state.

Two propositions were before the meeting for consideration. The first, which called for the election of representatives to assist in the formation of a state association of manual arts teachers, was carried unanimously. The second, providing for the appointment of a committee to go before the state board and ask for the adoption of certain recommendations for improving the status of industrial arts, was also carried by vote of the members present. The recommendations have for their purpose the elimination of red tape in certifying manual arts teachers, the improvement of standards for teachers, and the solution of the problem of inexperienced teachers.

The officers elected for the year 1924 were:

Chairman, Mr. R. D. Brooks, Great Bend, Kans.
Vice-Chairman, Mr. E. G. Barber, Salina, Kans.

—**Glenn C. Archer.**

NORTHWESTERN OHIO MEETING

The annual meeting of the Manual Arts Section of the Northwestern Ohio Teachers' Association was held at Scott High School, Toledo, Friday afternoon, October 26.

Mr. J. D. McDonald, head of the department of vocational and commercial education at Ohio State University, presented a very interesting paper on Objectives in Vocational and Manual Arts Teaching, in which he first took up the discussion of the junior high school and brought out as the three principal objectives in the teaching of manual arts at this level, increased practical efficiency, the try-out or sampling feature, and added interest in other related subjects.

Above the junior high school level, the speaker showed how the try-out or sampling feature could not be considered as an objective owing to the fact that by that time the student's course is probably pretty definitely decided upon, but that the others, increased practical efficiency and added interest in related subjects, remained throughout the senior high school course.

Mr. McDonald emphasized the fact that the manual arts course must continue to serve society in such a way as to be appreciated by society if it is to maintain its place in the curriculum.

Mr. Fred Dannenfelser, head of the manual arts department of the Libbey High School, Toledo, read a paper in which he set forth many interesting sidelights on industrial and vocational education.—**A. G. Backus.**

CONNECTICUT ARTS ASSOCIATION

The Connecticut Arts Association held a meeting on October 26 in connection with the annual meeting of the State Teachers' Association, which took place at Hartford. About fifty members of the association and many other teachers were present and heard Mr. Joseph Wiseltier, state supervisor of art in the normal schools, in an interesting talk on The Proposed Program of the State Board for Public School Art Work.

At the business meeting which followed, a report was read from the Committee on Minimum Essentials and State Examinations for Art Teachers. Desiring more information on the subject, the committee has appointed ten more members, making a committee of fifteen members in all.

The next meeting will be held during the month of February, at New Haven, Conn.—**F. W. Brackett.**

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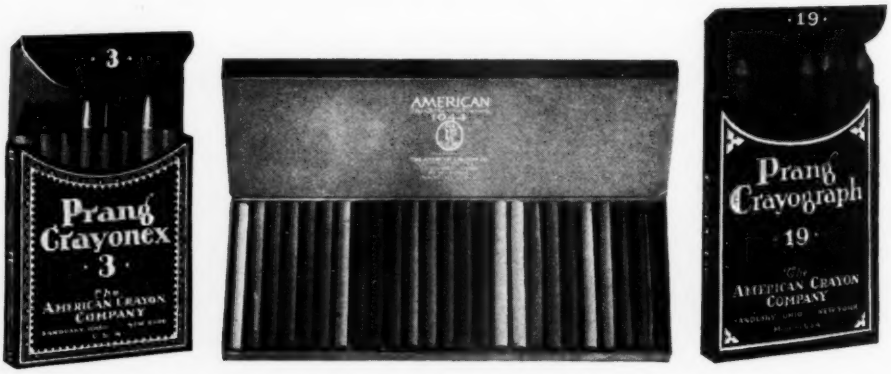

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NEWS AND NOTES

Mechanical Drawing Exhibit. For the third time an exhibit of mechanical drawings made by boys in the regular seventh and eighth grades of the elementary schools was held in the Rothenberg School, Cincinnati, on November 24th. Every boy in the seventh and eighth grades submitted one or more drawings. High school teachers of mechanical drawing passed upon the merits of the work in accordance with the following scale of values: Correctness, 20 per cent; line work, 20 per cent; placing views, 15 per cent; dimensioning, 15 per cent; lettering, 15 per cent; neatness, 15 per cent. Schools were listed in three groups according to the score made and printed certificates were issued to those schools listed in the A and B groups.

Trade Courses Offered. Courses in automobile mechanics and electrical repair, tire vulcanizing, blueprint reading and trade drawing, cabinet-making, carpentry, commercial photography, electrical wiring and power plant operation, machine shop practice, millwork, oxy-acetylene welding, painting and wood finishing, pattern making, printing, radio telephony, sheet metal work, tool and die making, and wood turning are offered in the evening vocational schools at Buffalo, N. Y. The city maintains four vocational schools with a large attendance of both day and evening students.

New Vocational Department. A vocational department has been established at Gloversville, N. Y., for the training of students for the glove and leather industry. The school meets two needs, i. e., that of the student who must leave school before completing his regular course of training for an occupation, and that of the manufacturer who requires trained operatives. The course provides for definite training in machine practice for two and one-fourth hours daily for a term of twenty weeks. When he becomes proficient in the work, he is given actual practice on gloves and begins earning while he finishes his term's work in school. Pupils completing the course are given a vocational certificate signed by the assistant commissioner of secondary education of the state.

Grade Mechanical Drawing. Mr. F. E. Allen, of Pendleton, Ore., has inaugurated a unique method for grading mechanical drawing papers. Mr. Allen's plan provides for the following outline of grades on each plate of the drawing:

	Perfect Grade	Actual Grade
Accuracy	20	..
Objective lines	19	..
Neatness	18	..
Lettering	16	..
Dimensioning	16	..
Time	11	..
Grade	..	..

After a careful explanation of the outline the papers are graded and proper marks are placed in the outline. The advantage of the method is that the pupil can see at a glance what part of the drawing is improperly done.

Study Hours for Industrial Teachers. The Metropolitan Museum of Art of New York City has outlined a series of so-called study-hours for teachers interested in the relation of art to industry, the home and modern life. The aim of the course is to interest teachers in the Museum collections, to give opportunity for research and directed study, and to offer help by means of discussion and comparison of the design of the past and present toward the application of art to everyday life. The course is divided into two groups and each may be taken by paying the required fee of $4.

The Johnstown Plan for Junior High Schools. The introduction of the junior high school at Johnstown, Pa., has offered an opportunity to enrich the field of manual arts and to solve some of the problems that have bothered teachers and parents. The junior high school has brought together large enough groups to work out a more elaborate system than had previously been attempted. In the seventh grade, each boy rotates through nine week-tryouts or experiment periods, four hours each week, in each of the following shops; sheet metal, electricity, joinery and mill woodwork. At this time mechanical drafting is introduced and the boy then learns whether he is mechanically or technically inclined. The try-out period is limited to the seventh year and has for its purpose the enrichment of experiences by sampling and doing, the production of utilities for home and school, training in skill and interests, and providing centers of correlation for other studies. In the second year the boys who elect to continue manual arts, choose the special field of industrial activity in which they are best qualified. This is the testing time and all students are expected to enter the trades or to pursue a technical education to take the work. In the third year the students are expected to settle down to fixed purposes and each follows the field of his ability and interest.

Students completing the junior high manual arts course are urged to specialize in the fields of engineering and are encouraged to take the technical course in the high school. The technical course is especially strong and has its appeal to high grade boys of ability and purpose who plan to go on to college.

Boys contemplating entering a trade when they leave high school are urged to take the unit trade courses. These courses which are arranged for half time in the shops, offer related and academic work of high school grade and are intended to parallel the technical course so that transition is possible up to the tenth year. At present the work embraces machine shop work, mill woodwork, printing and drafting.

With the completion of the unit trade work the boys are given an opportunity to work at their chosen trade in industry through the cooperative-industrial course. Two groups alternate every two weeks and while one group is at work the other group is in school.

Art Appreciation. The Chicago board of education has expressed its approval of the work of the Public School Art Society which has been instrumental in raising the level of art appreciation in the city schools. The society has contributed pictures aggregating more than $40,000,000. The pictures have been labeled and have in each case been accompanied by suitable lectures on the origin and history of the same.

Technical Work in Chicago High Schools. Although each high school in Chicago offers some form of handwork, there are three technical high schools, located in the three geographical districts, where the practical arts are made the center of the course. On the north side is the Lane Technical High School

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with an enrollment of 4,207 pupils; on the west side is the Crane, with an enrollment of 3,026 pupils, and on the south side is the Tilden, with 1,739 students. The four-year technical course for boys is offered in eight of the general high schools, as well as at the Lane, Crane and Tilden. This course is taken by all boys who enter the technical high schools, and where possible, is recommended for boys in the general high schools who desire to take shopwork as a major sequence. Nine different shops courses are offered in the technical department, and the time allotment for each is seven and one-half hours per week of twenty or forty weeks. In addition, each boy is required to take mechanical drawing during his first and second years, and either architectural or machine drawing during his third and fourth years. Reports from graduates who have been at work for a period of years shows that most of them enter the industrial world where technical knowledge is required, such as factory foremen and superintendents, salesmen of mechanical goods, designing engineers, efficiency experts and research men.

In addition to the above courses, the Chicago high schools offer two-year vocational courses for boys who do not expect to graduate. These courses are five in number and are intended to hold boys between 14 and 16 in school for at least two years longer and to give them a tryout in some chosen line of trade work for a period of two years. In addition to the shop courses, the boys are also required to take academic work and mechanical drawing. The courses are so arranged that by electing the required academic subjects of the first two years in the third and fourth years, these boys may then be able to graduate should they desire to complete the regular four-year course. The work is under the direction of Mr. Albert G. Bauersfeld, supervisor of technical work in the high schools.

Plumbing Course. An advisory committee, composed of representatives of the journeymen's organizations and representatives of the education department has been formed at Buffalo, N. Y., to work out a course of study in plumbing for the McKinley Trade School. The course is intended to fix certain standards of work to which each boy must comply before he may receive the diploma of the school in the two-year day course planned for the school. The local master plumbers' association has agreed to employ boys graduated from the McKinley Vocational School, allowing each graduate credit of one year on his apprenticeship time for the two years spent in school. Mr. R. A. Bastian, of the industrial education department of Buffalo, was in charge of the arrangements for the plumbers' and steamfitters' course.

Gain in Knowledge and Skill Through Training. The state department of public instruction of North Carolina in one of its recent news letters gives the results of a questionnaire on the benefits derived by students from the special textile classes conducted during the past year. Out of 126 replies returned, 126 declared they derived benefit from the class and 106 were certain they received practical help through the work offered. A total of 32 declared they had been promoted as a result of the work accomplished, and eleven stated they were in line for promotion or for an increase in salary. In some cases, the students were made to feel that they had missed something in past years and that they could make it all up by means of the night school. In other cases, the students were able to gain in expert knowledge and skill through the help given in the classes. One student declared he understood his problems better and had become more proficient in his work. Another stated that he had learned to figure production through the mill and was now able to figure any change that is to be made. In another case it was the means of creating more interest in the particular job, of creating a desire for more knowledge, and making it the highest aim of helping the other fellow. Three men in one class, it was pointed out, have been promoted as a direct result of the benefits derived from the textile classes.

New Vocational Equipment. The vocational department of the McGill School, at McGill, Nev., has been equipped with a power saw, lathe and joiner. The three-year vocational course is open to boys 14 years of age who have completed the sixth grade. The course has proved popular with all students.

Evening Vocational Courses. At East Chicago, Ind., evening courses are offered in automobile repair, machine shop practice, blueprint reading, pattern making, cabinet making, shop mathematics, millinery, cooking, sewing, bookkeeping and shorthand, and English. Mr. C. E. Hayden is in charge of the work.

Home mechanics instruction is offered this year in the seventh grades under the direction of J. W. Govin of Stout Institute.

School Shop Fireproof. The boys' vocational school at Albany, N. Y., has been provided with additional equipment. A number of fireproof features have been added including a fireproof welding table, fireproof hood, and other means of guarding against accidents.

Conference of Trade Schools. A conference of trade schools was held in Milwaukee, Wis., on November 9th. Separate group meetings for the machine shop, sheet metal, carpentry, pattern making, cabinet making, electrical, printing and drafting trades were held.

Book Binding Prize. The Louisville Vocational School, at Louisville, Ky., won the first prize in Class A in bookbinding work at the national convention of Bookbinders of America, held at Washington, D. C. At the exhibit several pieces of work ranging from simple tablets to handsome bound volumes in morocco, were shown. Mr. C. P. McGuire is head of the bookbinding department and directed the arrangement of the exhibit.

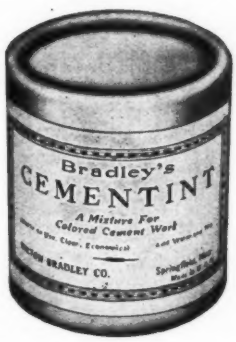
Schools Produce Posters. Public school pupils at Cincinnati, O., have displayed remarkable ingenuity in turning out school posters advertising the extra tax levy. About one thousand posters which were selected from the pupils' work have been distributed among the business houses and residences for public display. In addition, fifty thousand linoleum prints of a poster were distributed among the homes for similar display purposes.

Gift for Industrial School. Mr. Milton S. Hershey, multimillionaire of Harrisburg, Pa., has given his entire wealth of $60,000,000 in trust for the Hershey Industrial School in that city. The school which was founded in 1909 as an orphanage, is the second richest one of its kind in the country. The old homestead at Hershey was deeded to the school in 1909 by Mr. and Mrs. Hershey.

Plasterer's School. A school for plasterers' apprentices has been approved by the school board at Cleveland, O. The school

(Concluded on Page XXIX)

BRADLEY'S
— SCHOOL ARTS SUPPLIES —



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is made in the following colors:

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Decorate CEMENTINT with Bradley's GESSO in nine shades. Finish with highly waterproof Bradley's LACQUER.

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(Concluded from Page XXVI)

is intended to provide trained workers for this industry which has suffered a serious shortage of trained men.

Evening Trade Schools. Evening trade classes at the Boys' Vocational Schools, Newark, N. J., opened with an enrollment of 750 men and boys, all employed in the trades. Apprentice classes have been organized in foundry and sheet metal work.

Mining Class. A vocational class in mining has been organized at Parrish, Ala. The class meets twice each week and sessions are two hours in length. The course covers mine management, timbering, gasses, legal aspects and requirements, and other phases of industry.

Classes for Vocational Teachers. Evening classes for the training of teachers in vocational and industrial education have been established at Rochester, N. Y. The work is intended to provide trained teachers in electricity, machine shop practice, mechanical drafting, pattern making, millinery, dressmaking, cabinet work, interior decorating and sign writing, automobile mechanics, printing and sheet metal work.

Brick-laying Class. An evening class in brick laying has been proposed by the board of education at Kearney, N. J.

Vocational Conference. A three-day vocational conference of Iowa educational workers was held in October, at the Iowa State College, Ames, Ia. Among the speakers were Mr. R. A. Pearson of the State College; Prof. A. J. Latham of Columbia University; Miss May Francis, state superintendent; Prof. Arthur Dean of Columbia University; Prof. W. H. Lancelot, of the State College; Prof. Anne E. Richardson, and Miss Helen Latham.

Make Kindergarten Chairs. The boys of the manual training department at Galesburg, Ill., have filled an order of the board for 24 chairs for the primary department. For the past nine years the department has cooperated with the board in the repair of school equipment and the making of certain needed articles in school work.

Vocational Conference. The first state vocational conference on vocational guidance was held Nov. 19-21, at the University of Illinois, Urbana.

The Carnegie Institute of Technology by agreement with the International Wood, Wire and Sheet Metal Lathers will train fifteen apprentices. Through another agreement with Amalgamated Sheet Metal Workers International and the Sheet Metal Contractors' Association of Pittsburgh sixty apprentices have been enrolled.

VOCATIONAL EDUCATION ASSOCIATION OF THE MIDDLE WEST

The Tenth Annual Convention will be held at the Hotel Chase, St. Louis, January 16th to 19th inclusive. A very interesting program is being developed by Mr. Wm. J. Bogan, Principal, Lane Technical High School, Chicago, who is Chairman of the program committee. Topics on Vocational Education will be discussed by speakers of National reputation such as: John J. Tigert, Commissioner of Education, Washington, D. C.; Ruth Mary Weeks, Department of Sociology, Kansas City, Mo.; Lita Bane, Executive Secretary, American Home Economics Association; Aaron Sapiro, Attorney, Farmers' Cooperative Association, New York City; Charles A. Prosser, Director, Dunwoody Institute, Minneapolis, Minn.; Dr. G. L. Swiggett, Specialist in Commercial Education, Washington, D. C.; Matthew Woll, Secretary, American Federation of Labor, Chicago, Ill.; Arthur Dean, Specialist Vocational Education, New York City.

Space will not permit a detailed statement of the many topics to be discussed under the general heading of vocational education. However, some of the many interesting subjects are herewith offered as an example of the rich program being prepared by the committee for all members attending the Convention:

Objectives in Industrial Arts in Junior High Schools, W. E. Roberts, Director of Industrial Arts, Cleveland.

Objectives in Industrial Arts in Senior High Schools, Chas. A. Bennett, President, Manual Arts Press.

The Essentials of a Teacher-Training Program, R. W. Selvidge, Professor of Industrial Education, University of Missouri, Columbia, Mo.

Suggestions Relative to a Teacher Improvement Program, H. C. Givens, State Supervisor of Grades and Industrial Education, Little Rock, Ark.

The Training of Administrators and Directors with reference to Vocation Industrial Education.

J. C. Miller, Prof. of Education, Indiana University, Bloomington.

Part Time Education and the Apprenticeship Problem, Mrs. Jennie M. Turner, State Board of Vocational Education.

How to Get the Most Out of Four Hours Per Week, H. H. Heely, Director of Part Time Education, Peoria, Ill.

Social Problems of the Part Time School, George Mangold, Prof. of Social Economy, U. of Mo.

Correspondence Courses and High School Students, S. C. Mitchell, Supt. of Schools, Benton Harbor, Mich.

The Public Schools and the Civilian Rehabilitation Program, Willis W. Grant, Supervisor Rehabilitation Service, Des Moines.

What the Home Economics Worker or Teacher Can Give the Lay Woman, Mrs. Charles Sewell, Otterbein, Indiana.

Adult Education in Home Making, Lita Bane, Executive Secretary, American Home Economics Association.

The Home Craft Course for Part-time Girls, Nona Goodwin in charge Winchell Continuation School for Girls, Chicago, Ill.

Evening School Mothercraft Courses in Oklahoma, Maude Richman, State Supervisor of Home Economics, Oklahoma.

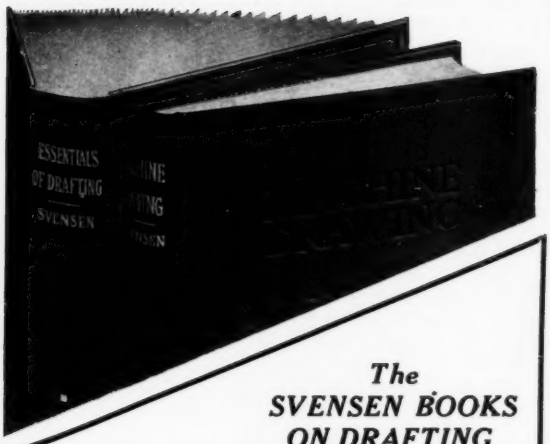
The Use of the Home Economics Cottage for Secondary Schools (speaker to be supplied).

A Survey Course in Home Economics for the Ninth Grade, Bertha Latta, State Supervisor, of Home Economics Education, Ind., Mary Heeman, Supervisor of Home Economics Education, Munci, Ind.

What the Parent-Teacher Association has to offer the Homes Economics Teacher (speaker to be supplied).

Superintendent Maddox of the St. Louis Public Schools, and Lewis Gustafson of the David Ranken School of Trades in St. Louis, are directing the work of the local committee in that city, and they have the support of all the educational forces of the city and the backing of a very active public bureau. The new and splendid Hotel Chase, which is admirably adapted to holding a Convention, has been selected as headquarters.

For advance information, railroad fares and other information, a letter to the Secretary, Leonard W. Wahlstrom, 1711 Estes Avenue, Chicago, will bring a prompt reply.



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This introductory textbook on Mechanical Drawing covers theory and practice, with an unusual number of testing problems arranged in a special chapter in the rear of the book. It is very complete yet concise and contains no redundant material, no "cutting" is necessary, yet all the ground is thoroughly covered.

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NEW BOOKS.

Art Training for Life and for Industry

By Charles Alpheus Bennett, Paper bound, 61 pages. Price $1.00. Published by The Manual Arts Press, Peoria, Illinois.

If the applied arts are not receiving the encouragement they deserve, it is largely because there is a lack of appreciation for them among those identified with the industrial life of the nation. The fact that art enters so many lines of production, and ought to enter into more, has been minimized and poorly understood.

The author not only presents the essence of art appreciation but gives his reasons why there should be more art in industry. He pleads for a national school for industrial art.

The Welding Encyclopedia

Third edition. By L. B. Mackenzie and H. S. Card. Flexible leather, 437 pages, illustrated. Price, $5.00. Published by The Welding Engineer, Chicago.

This is the third edition of a deservedly popular reference book. It is in fact the one important dependable reference book for the welding engineer and practical welding journeyman. In the present edition each statement and each process has been checked up with the latest developments and corrected according to the present day practice. For school men an important chapter has been added in the shape of an outline for training oxy-acetylene welders and electric arc welding operators. In addition to a complete series of exercises and suggestions for supplementary information, there is a suggestion for an examination to be given to students of the course before they are given a rating of journeyman. The book is fully illustrated and bound in serviceable imitation leather.

A Sheet Metal Course.

By Walter Muntz. Paper, 22 pages. Published by the author at Preston School of Industry, Waterman, Calif.

This booklet outlines an interesting course in sheet metal work for trade schools. The author suggests preliminary shop work, a method of caring for tools, a series of lectures to accompany practical shopwork, the equipment for a typical sheet metal shop accommodating fifteen pupils, a carefully graded series of projects in general sheet metal work, a series of problems in cornice and skylight work. In addition to the general outline for the course a series of class discussions and an example of a practical examination are included.

Sheet-Metal Work

By Marion S. Trew and Verne A. Bird. Paper, 64 pages, illustrated. Price, $0.85. The Manual Arts Press, Peoria, Ill.

This introductory text for junior high schools reflects recent tendencies in shop teaching. It opens with rather complete information on the basic sheet metal materials and carries through a course of instruction in the shape of 26 problems. These are well graded, carefully illustrated and amply supplied with questions for study. The work has been successfully used in the Rochester, N. Y. schools.

Agricultural Education. By George A. Works, Ithaca, N. Y. Price, five cents. Bulletin No. 19, 1923, U. S. Bureau of Education. The present report offers a fairly complete idea of the magnitude of instruction in vocational agriculture and the rate at which it has developed in recent years. A total of 2,175 high schools are reported as teaching the subject of agriculture, of which 1,710 were established since 1910. In addition to high schools, there are a number of special schools offering courses of from two to four years. These are found in the states of Massachusetts, Wisconsin, Oklahoma, New York and Vermont. The report points out that the enrollment in part-time work in 1922 has increased 309 per cent over the previous year, while that in all-day schools increased but 29.9 per cent.

Five bricklayers' unions of New York City have voted to place 1000 boys now plying the trowel and mortar in the schools for supplementary training. They will study shop practice, mathematics, trade sketching and subjects relating to bricklaying.

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NEWS AND NOTES

Industrial School. Beginning with the present term, a two-year industrial school has been established at Herculaneum, Mo.

The Vocational Education Association of the Middle West will meet January 16-19 at the Hotel Chase, St. Louis, Mo. Approximately 1200 delegates will attend, representing the territory bounded by Cleveland, O., on the east, Minneapolis and Duluth on the north, Omaha on the west and Dallas and Oklahoma on the south.

In defense of vocational guidance and placement work Robert K. Hanson, director of metropolitan boys' work, organized by the Rotary Club of Newark, N. J., recently said: "The average kid can't find work for himself." He has learned that the boy does not know where to obtain a job and how to apply for it. Dr. James S. Plant stated:

"From our point of view this work should have nothing to do with the usual type of employment bureau. The problem is essentially different because the adult largely seeks a more or less temporary adjustment whereas with a large number of children, vocational guidance involves a certain setting of the child's future course.

"One of the things that has enormously increased the cost of the school system," said C. S. Coler, head of the educational department of the Westinghouse Electric Company in a public address, "is that fathers and mothers generally believe the opportunities in the trades and the technical callings of civil life are inferior to those to be had through school and college education. By reason of this belief, few facilities for training men adequately for such callings are offered, and by reason of these two things the schools are overrun by a flood of pupils, many of whom would never have been admitted under reasonable conditions."

Of the 1200 night students enrolled in the Carnegie Institute of Technology at Pittsburgh, Pa., fully fifty per cent are taking courses in the building trades. The courses in carpentry and electrical equipment report the heaviest gains. This is accounted in the high wage scales now prevailing in these branches of work. An increase in the masonry classes is also noted.

"Technique is something more than mere skill at mechanics and methods," says Josephine Quinn of the Clay school, Chicago. "It is a wider term than either of them. An inherited aptitude for an art or a profession may early give us skill at the mechanics or methods of that art or that profession. But long effort and hard labor and determination to succeed must play their part to produce and develop and perfect the thing we call technique."

Vocational Courses. In the new junior-senior high school at Lancaster, N. Y., vocational courses in cooking, sewing, dress making, millinery, sheet metal, electrical work, wood working, and carpentry are offered .

Industrial School Receives Sixty Millions. The Hershey Industrial School located near Harrisburg, Pa., has received an endowment of $60,000,000. This endowment was conferred by William S. Hershey, the multimillionaire candy manufacturer.

The school, which is located at Hershey, is to be enlarged. In admitting students, preference will be given to orphan children coming from Dauphin, Lebanon and Lancaster counties. Those born in Pennsylvania, outside of the counties named, will be admitted. When under these conditions there is room for more, then children born anywhere in the United States will be accepted.

Ohio Conference of Trades and Industries. A conference of the trades and industries section of the Ohio Teachers' Association was held October 19 and 20, at the Hotel Cleveland, Cleveland, O. Mr. J. F. Arundel, vocational director at Cincinnati, talked on "The Cultivation of Job Pride in American Industry." Other Cincinnati vocational teachers who took part were Mr. F. G. Dietrich of the sheet metal department, Mr. Ray F. Kuns of the automotive trade school, and Mr. G. J. Huebner, instructor in tailoring.

"A usable education for all the children of all the people is the only way by which democracy can have all of its needs administered," said R. O. Small, director of vocational education of Massachusetts recently. "In the long run it is the only way we can retain democracy."

"Equal opportunity in the schools means opportunity for the boy who is fitted to become a skilled artisan as well as the boy who aspires to follow an intellectual pursuit. Society needs them both and there is merit to the argument that society should educate both, if it is pos-

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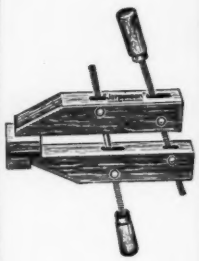

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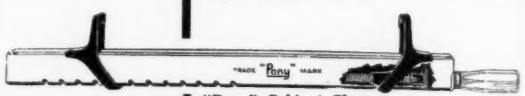

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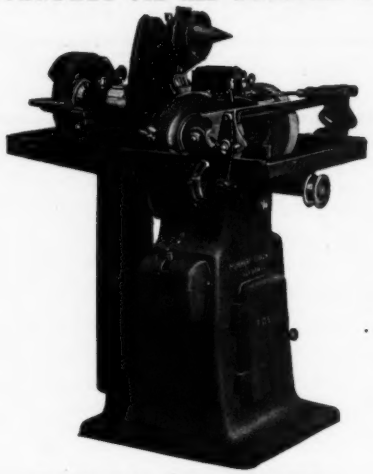

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sible and reasonable to do so," says the Denver news. "Up to a certain point they can be given the same instruction; beyond that point there is a vast difference. Not only is there the responsibility to the individual pupil on the part of the school but to the community, for with restricted immigration and iron-clad union rules, unless trade and vocational institutions are established, America will continue to experience with increasing cost and discomfort the disadvantages and drawbacks."

The Alabama School of Trades and Industries, located at Ragland, is authorized by the legislature to seek a new location. The cities of Birmingham, Montgomery, Mobile, Anniston, Gadsden and Huntsville are named as available locations. The city offering the best inducements will get the school.

The Natural Resources Intelligence Service of the Department of the Interior, at Ottawa, Canada, advises that they are prepared to supply free to teachers pamphlets, maps and other information on Canada which may be required in their work or in the preparation of special studies on Canadian subjects.

Origin of Hardwoods. The caption of this item is the title of a valuable little booklet prepared by Mr. C. H. White, of White Bros., Fifth and Brannan Sts., San Francisco, Calif. The book contains descriptive articles on 29 leading hardwoods which are popularly used for furniture construction and cabinet-making. The booklet gives not only a popular description and a clue to the origin of each kind of wood but also its botanical name and its principal uses.

Copies of the booklet will be sent, without charge, to any reader of the Magazine.

Glue Course. A course on the gluing of wood will be given December 3 to 8, at the Forest Products Laboratory, Madison, Wis. The course will be the same as that presented in the past, with the exception that there will be offered to the students, the most recent results of research work in connection with glues. Among the points covered will be characteristics and advantages of different kinds of glues; gluing methods for various woods; pressure, temperature and assembly time; common defects in gluing and how to prevent them; effect of kiln drying on wood as compared with air seasoning.

Other courses which will be offered in the December group of instructional courses will be kiln-drying of lumber, boxing and crating, wood properties and uses, and wood as a building material.

The fee for the kiln-drying course will be $150, and for all other courses it will be $100.

Information concerning the courses may be obtained from the Director of the Forest Products Laboratory, Madison Wis.

Oppose Instruction. The proposal on the part of the north side high school of Denver, Colo., to give instructions in the art of bricklaying is being opposed by the local bricklayers' union.

Vocational Classes Occupy New Department. The vocational department at Fort Madison, Ia., has occupied its new quarters in the high school just completed. The ground floor is almost entirely occupied by the vocational classes. Three large rooms are occupied by the bench-room, the machine room and mechanical drawing class. The shop is provided with all modern equipment in the way of machines, jointers, planes, saws, mortisers and grinders.

In addition to the shops, there is a finishing room enclosed in glass on three sides. The classrooms are all located on the third floor of the building.

A fine cafeteria, modern in all details, serves the needs of students who are obliged to remain at the building during the noon hour.

Add to Dixon Products. A little over a year ago the Dixon Pencil Company of Jersey City, N. J., enlarged its pencil line to include a new brand of wax crayons known as "educator." This line which opened with an eight-color box for schools, has now been increased with the addition of a six-crayon box known as Educator B-6. The latest addition is offered to the school trade in response to an insistent demand for a box of this character. Information concerning the new crayon box may be addressed to the Dixon Pencil Co., at Jersey City, N. J.

Miss Martha Westfall has been appointed director of cooking by the New York City board of education.